INSTITUTE FOR DEFENSE ANALYSES

Department of Defense Access to Intellectual Property for Weapon Systems Sustainment

Richard Van Atta, Project Leader
Royce Kneece
Michael Lippitz
Christina Patterson

May 2017

IDA Paper P-8266
Log: H 17-000030

INSTITUTE FOR DEFENSE ANALYSES
4850 Mark Center Drive
Alexandria, Virginia 22311-1882

The Institute for Defense Analyses is a non-profit corporation that operates three federally funded research and development centers to provide objective analyses of national security issues, particularly those requiring scientific and technical expertise, and conduct related research on other national challenges.

About This Publication

This work was conducted by the Institute for Defense Analyses (IDA) under contract HQ0034-14-D-0001, project AR-6-4147, "Review of Government Access to Intellectual Property Rights of Private Sector Firms," for the Director, Defense Procurement and Acquisition Policy (DPaP). The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

The authors wish to thank Mr. James Dominy, Dr. Paul Richanbach, and Dr. Alan Gelder for their review and thoughtful contributions to this publications.

For More Information:
Dr. Richard H. Van Atta, Project Leader
rvanatta@ida.org, (703) 845-2214
Mr. Michael L. Dominguez, Director, Strategy, Forces and Resources Division
mdomingu@ida.org, 703-845-2527

INSTITUTE FOR DEFENSE ANALYSES

IDA Paper P-8266

Department of Defense Access to Intellectual Property for Weapon Systems Sustainment

Richard Van Atta, Project Leader
Royce Kneece
Michael Lippitz
Christina Patterson

This page is intentionally blank.

Executive Summary

This paper reports the findings of a project requested by the Office of the Secretary of Defense (OSD), Defense Procurement and Acquisition Policy to comply with Section 875 of the Fiscal Year 2016 National Defense Authorization Act, which called for a review of:

a) "Department of Defense (DOD) regulations, practices, and *sustainment requirements* related to Government access to and use of intellectual property rights of private sector firms; and

b) DOD practices related to the procurement, management, and use of intellectual property rights to facilitate *competition in sustainment* of weapon systems throughout their lifecycle."

Intellectual Property (IP) Law and Defense Acquisition

IP comprises four categories: patents, copyrights, trademarks, and trade secrets. Protection of private sector IP is recognized as crucial for fostering innovation. However, prior to 1984, data rights pertaining to DOD contracts were not explicitly stated in statute; rather, they were covered in departmental regulations. The 1984 Defense Procurement Reform Act, which became §2320 and §2321 of Title 10 United States Code (U.S.C.), provided specific rights in technical data and procedures to delineate the rights claimed by contractors, as well as those provided to the government.

In addition, concerning sustainment, 10 U.S.C. §2464 requires DOD to maintain core depot capabilities for key weapon systems adequate to support expansion for wartime operations, and §2466 places a 50 percent limitation on the funds made available to a military department or defense agency that can be used to contract for performance by non-Federal Government personnel (the "50/50 rule").

DOD regulations regarding IP have expanded considerably over the years, and today are quite robust. An IP section of the Acquisition Strategy is a statutory requirement at DOD acquisition Milestone A. An IP strategy annex must become part of the Life-Cycle Sustainment Plan during the operations and support phase.

Advances in technology, expanded use of commercial components, and increasing software content in DOD weapon systems have made IP issues more contentious between DOD and its contractors, especially original equipment manufacturers (OEMs). This is due in part to ambiguities in determining whether and how much a contractor or the government

funded particular developments. Contractors seek to protect IP to maintain their competitive position, while the DOD sees that the unavailability of IP can limit the ability to perform maintenance in DOD depots and reduce competition in providing parts and services to sustain weapon systems. For many key systems, there are only two or three capable suppliers and once a selection is made, the sole-source provider has a great deal of leverage in negotiations with the government over IP. Given the long-term value of these contracts, firms will sometimes bid low on development and/or production under the assumption that they will provide profitable support over many years. Acquisition program management offices (PMOs) are challenged to balance delivering desired performance within near-term cost and schedule constraints (and sometimes meeting pressing operational demands) against future operations and maintenance costs.

DOD has a substantial inventory of "commercial derivative aircraft (CDA)." For civil aircraft, the Federal Aviation Administration (FAA) requires that OEMs provide airworthiness maintenance data to owners and are available to maintainers. While operations of DOD aircraft are not governed by FAA regulations, DOD can take steps to have such aircraft certified to be eligible for the FAA data. Commercial maintenance, repair, and overhaul (MRO) firms seeking to access DOD sustainment business claim that DOD should make greater use of that option.

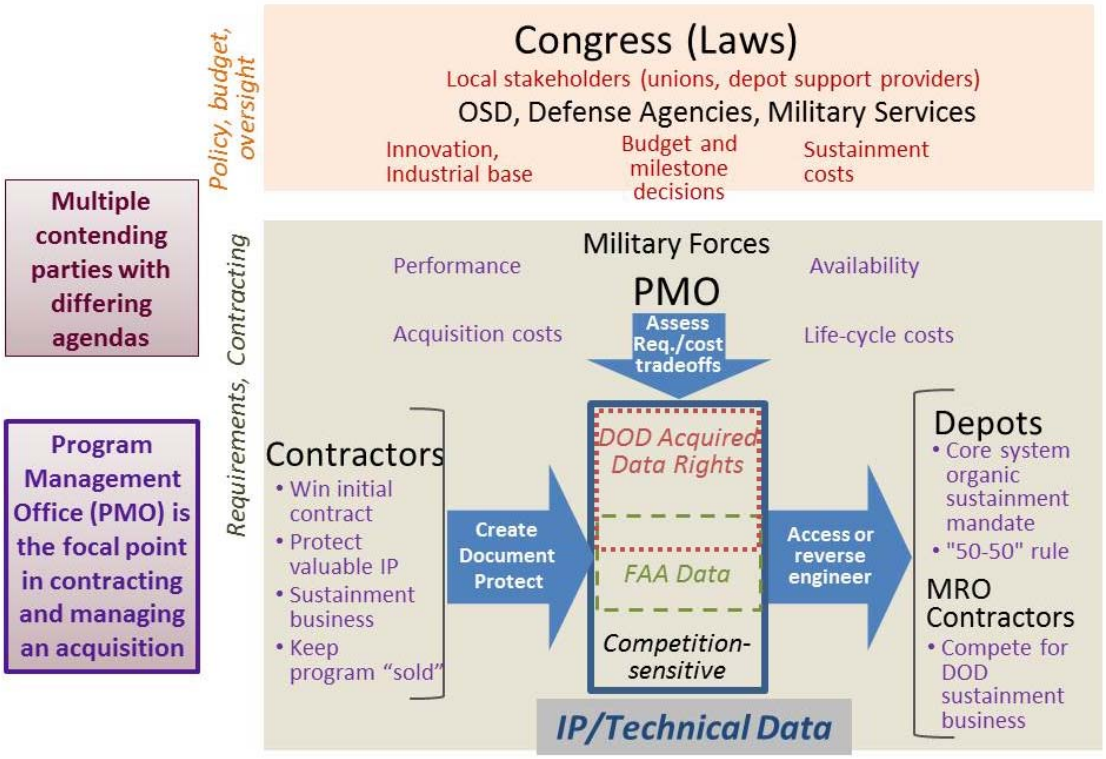
DOD Practices and Issues Regarding IP

The figure at the top of the next page depicts the intersecting and often competing relationships among stakeholders involved in determining and employing IP rights for the sustainment of weapon systems. DOD—primarily through acquisition program management—must balance these competing interests in seeking to achieve the best results in acquisition and sustainment of DOD weapons systems.

From interviews, questionnaire responses, and review of literature, including other studies on the topic, the following issues were identified regarding IP and the sustainment of defense weapon systems:

Process Participation

Although the military departments have mechanisms for bringing sustainment expertise into the acquisition process, DOD organizations for acquisition and sustainment are largely separate, with a resulting lack of focus on sustainment in the acquisition process.



Interrelationships and Stakeholders in IP and Sustainment

Difficulties Obtaining IP Data and Rights

Provisions and approaches stated in acquisition planning to access IP for sustainment frequently have not been realized in subsequent contracts, either because contractors refuse to agree to provide the data and rights or because of budget, time, and staffing constraints on the PMO.

Data Provided With Disputed Assertion of Rights

Technical data and related materials submitted by contractors may have rights markings that DOD contends to be either erroneous or inappropriate, but the challenge process can be arduous, lengthy, and burdensome to both the contractor and DOD, and DOD must abide by the contractor markings until issues are resolved.

Obtaining Technical Data and Rights to Establish and Maintain Core Logistics Capabilities

Many programs have had difficulty establishing organic core depot sustainment, as required by 10 U.S.C. §2464, due to the lack of technical data and software and rights thereto.

Ability to Compete for Parts Procurement

Sole-source procurement of subsystems and parts often results from DOD programs not having obtained sufficient IP data or rights to permit third-party suppliers to produce qualified replacements.

Training and Availability of Supporting Expertise

PMOs lack personnel sufficiently trained in IP issues and related contractual requirements and sustainment, and access to such expertise outside PMO is very limited. Staff capabilities in this area have diminished over the past several years.

Conclusions

- In the past, acquisition decision-makers in both OSD and the military departments have failed to focus sufficient attention on identifying and accessing the IP needed for weapon systems sustainment. There is recent evidence of improvement, but it is too early to assess whether those efforts are sufficient.
- Lack of access to IP data with appropriate rights inhibits DOD's ability to use competitive contracting for repair parts, maintenance and follow-on production, and likely translates into higher long-term sustainment costs.
- Acquisition program management often has not given IP for sustainment adequate or appropriate attention.
- Depot maintenance capabilities required by law may not be met because of a lack of necessary technical data and software; the use of OEM-based, public-private partnerships do not ameliorate that deficiency, since in general such partnerships do not provide the government sufficient technical data and rights to perform the full range of depot maintenance without the private partner's participation.
- Ambiguous terms and loosely defined constructs impair the implementation of IP for sustainment.
- Use of FAA maintenance data for DOD CDA can be expanded and could result in substantially lower sustainment costs for these aircraft.
    - Buy-in development and production contracts can result in OEM lock-in of sole-source sustainment franchises.

Broader Challenges

Renewed focus in DOD on reducing sustainment costs may provide incentives for programs to address IP early, but this creates broader challenges:

- There is a vast legacy of defense systems, amounting to billions of dollars in sustainment costs, for which the necessary IP data and rights for organic depot or competitive sustainment were not acquired.
- Future defense systems for which there is little, if any, competition will give DOD little leverage to negotiate acquisition of IP early in the program.
- Although fostering innovation, systems developed by a defense vendor exclusively at their own expense, as was the case for several unmanned air systems, often provide limited data rights to DOD, hindering sustainment by anyone other than the OEM.
- Purely commercial technologies, including a vast array of software products that DOD is increasingly using, provide only the same access to IP that commercial customers have, unless DOD can negotiate more extensive rights. This challenges DOD sustainment concepts.

These challenges, largely the result of the diminished competitive environment for defense weapon systems, raise the question: Has the point been reached at which the underlying assumptions of competitively bid contracts are of decreasing validity? If true, this presents DOD with a serious problem that would require new thinking about the laws and regulations governing IP for DOD weapon systems and their sustainment.

Recommendations

- Make sustainment and acquisition of related IP data and rights an explicitly stated high-priority in DOD management and oversight of acquisition programs.
- Establish or expand existing organizational capabilities within the DOD components (with OSD support) to provide expertise in the acquisition of IP data and rights to program managers throughout their programs' lifecycles, as well as other staff involved in weapon systems acquisition.
- Require DOD acquisition programs that are largely dependent on sole-source contracts to OEMs for sustainment to conduct a Business Case Analysis of options to transition to a competitive model for sustainment (maintenance and supply). The results should be forwarded to the component acquisition executive with a recommended plan to obtain the necessary IP data and rights.
- State as a matter of policy that DOD acquisition programs that use CDA should maximize use of data provided for FAA-certified aircraft under FAA regulations to facilitate competition for maintenance and supply of parts for systems and components.
- Establish under OSD auspices an ongoing DOD advisory group to identify and, in consultation with industry, seek resolution of ambiguities and disagreements in

terms and provisions related to DOD sustainment needs, particularly those involving access to and use of IP. The group should be tasked to develop an appendix to the Defense Federal Acquisition Regulations that would specify in greater detail the meaning of such terms as "operation, maintenance, installation and training" data; "form, fit and function" data; and "detailed manufacturing and process" data.[1]

- DOD should support and fund an assessment of DOD acquisition and sustainment specifically focused on alternative approaches for contracting and overseeing the development, procurement, and sustainment of weapon systems under severely limited competition.

[1] A model for such an appendix is the appendixes to FAA regulations regarding Instructions for Continued Airworthiness Data (14 Code of Federal Regulations (CFR), Part 33).

Contents

Appendices

1. Task and Approach

A. Tasking

The Office of the Secretary of Defense (OSD), Defense Procurement and Acquisition Policy (DPAP) tasked the Institute for Defense Analyses (IDA) with conducting a project to comply with Section 875 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA), which calls for a review of:

a) "Department of Defense (DOD) regulations, practices, and sustainment requirements related to Government access to and use of intellectual property rights of private sector firms; and

b) DOD practices related to the procurement, management, and use of intellectual property rights to facilitate competition in sustainment of weapon systems throughout their lifecycle."

Section 875 further directs that the review "shall consult with … each Center of Industrial and Technical Excellence" (CITE), which include all major DOD maintenance depots).[1] Ultimately, the Secretary of Defense must provide "a description of any actions that the Secretary proposes to revise and clarify laws or that the Secretary may take to revise or clarify regulations related to intellectual property rights."

The project description states as the objective as follows:

> Identify key issues associated with current and potential alternative DOD policies and practices involving access to and use of intellectual property (IP) rights generally, and IP rights to support competition throughout the lifecycle, and to develop preliminary findings supported by such assessments.

[1] CITEs are depot maintenance activity designations required by 10 U.S.C. 2474. Service Secretaries are required to designate CITEs to be leaders in particular sustainment core competencies; e.g., "explosive ordinance disposal." The CITE designation provides an exemption from "50-50 limit" on use of private contractors by depots (10 U.S.C. §2466) provided that the work is performed by industry personnel at the depot, in the context of a formal partnership agreement.

The statement of work specifies that the project will

1. Review DOD regulations, practices, and sustainment requirements related to government access to and use of IP rights of private sector firms;
2. Review Department of Defense practices related to the procurement, management, and use of IP rights to facilitate competition in sustainment of weapon systems throughout their life-cycle; and
3. Consult with the National Defense Technology and Industrial Base Council[2] and each Center of Industrial and Technical Excellence (CITE).

Based on discussion with congressional staff involved in drafting the legislation, we determined that the primary interest behind the review called for in (b) above was concerns about the ability of "third party"[3] defense aviation maintenance, repair and overhaul (MRO) companies to effectively compete for DOD sustaining maintenance work. This focus reflects the fact that aircraft comprised over 50 percent of depot maintenance funding in recent budgets. Thus, given the project's time and money constraints, IDA decided to focus primarily (but not exclusively) on the aviation communities of the Army, Navy and Air Force.

B. Approach

To meet the provisions of the project description, the project team followed the following steps:

- Surveyed and reviewed selectively from the vast literature on IP and its role in DOD;
- Reviewed DOD regulations and related documents on policies, regulations, instructions and guidance concerning IP, developing sustainment plans, and determinations of competition for sustainment;
- Ascertained DOD acquisition and sustainment practices regarding IP through interviews and consultations with key organizations in the military departments that are concerned with IP issues: headquarters acquisition staffs, acquisition

---

[2] This entity is cited in the legislation, but IDA was unable to ascertain its actual existence, or, if it does exist, a point of contact to seek to have a dialog.

[3] Meaning neither government organizations nor original equipment manufacturers (OEMs).

program management offices (PMOs), and the sustaining logistics organizations; and

- Established points of contact for consultations with the DOD CITEs to be followed up with a questionnaire regarding IP issues.

In addition, the IDA team participated as observers in the Government-Industry Advisory Panel that was commissioned by Section 813 of the FY 2016 NDAA, and reviewed documents collected by the panel. The purpose of the panel, as specified in §813, is to review " §2320 and §2321 of Title 10, United States Code (U.S.C.),[4] regarding rights in technical data and the validation of proprietary data restrictions and the regulations implementing such sections, for the purpose of ensuring that such statutory and regulatory requirements are best structured to serve the interests of the taxpayers and the national defense."

The consultations with the CITEs, which are the DOD depots and arsenals, were initiated with a letter to the directors of those organizations from the President of IDA, which is included as Appendix A. The letter explained the background and purpose of the IDA project and requested a point of contact to initiate a dialogue. Table 1 lists the 28 DOD CITEs and indicates whether a response was received. IDA received formal responses from 17 of the 28 CITEs. Regarding Navy shipyards, the IDA team received a phone call from an individual in Naval Sea Systems Command (NAVSEA) that stated that inputs from the NAVSEA CITEs would be conveyed by NAVSEA; however, no inputs were received.[5] Responses were received from all but two Army CITEs.[6] No formal responses were received from any of the three Air Force CITEs. Instead, the Air Force Materiel Command submitted a consolidated response, which was received toward the end of this project. For the points of contact that had been provided by the CITEs, IDA followed up with a short questionnaire on sustainment-related IP issues (Appendix B) and interviews were conducted with several of the responding organizations.

---

4 U. S. Government Publishing Office. "United States Code, Title 10 – Armed Forces." https://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE&searchPath=Title+10%2FSubtitle+A%2FPart+IV%2FCHAPTER+137&oldPath=Title+10%2FSubtitle+A%2FPART+IV&isCollapsed=true&selectedYearFrom=2014&ycord=585. (All subsequent references to 10 U.S.C. in the body of this paper are based on this website.)

5 As noted in the table, a response was received from the Puget Sound Naval shipyard in the form of a letter addressed to the IDA president stating that the facility "does not deal in intellectual property issues."

6 The two Army CITEs for which we did not receive a reply were the Pine Bluff Arsenal, which deals with chemical and biological defense equipment, and the Sierra Army Depot, which deals with reverse osmosis water purification units.

Table 1. DOD Centers for Industrial and Technical Excellence

Army (10)	Response?
Anniston Army Depot	Yes
Corpus Christi Army Depot	Yes
Letterkenny Army Depot	Yes
Red River Army Depot	Yes
Tobyhanna Army Depot	Yes
Pine Bluff Arsenal	No
Sierra Army Depot	No
Rock Island Arsenal	Yes
Tooele Army Depot	Yes
Watervliet Arsenal	Yes

Department of Navy (15)	Response?
Fleet Readiness Center East	Yes
Fleet Readiness Center Southeast	Yes
Fleet Readiness Center Southwest	Yes
Naval Air Warfare Center Weapons Division	Yes
Naval Air Warfare Center Aircraft Division	Yes
Portsmouth Naval Shipyard	No
Norfolk Navy Shipyard	No
Puget Sound Naval Shipyard	Yes
Pearl Harbor Naval Shipyard	No
Naval Undersea Warfare Center	No
Naval Surface Warfare Center, Crane	No
Naval Surface Warfare Center, Indian Head Explosive Ordnance Disposal Technology Division	No
Space and Naval Warfare Systems Center, Atlantic	Yes
Space and Naval Warfare Systems Center, Pacific	Yes
Marine Corps Logistics Command, Depot Maintenance Command	Yes

Air Force (3)	Response?
Oklahoma City Air Logistics Complex	No
Ogden Air Logistics Complex	No
Warner Robins Air Logistics Complex	No

Note: The Air Force submitted a consolidated response on November 17, 2016.

The Navy and Army were particularly responsive to our requests for inputs. The Navy logistics community agreed to meet with the team, and trips for that purpose were made to Naval Air Systems Command (NAVAIR) at Patuxent River Naval Air Station, Fleet Readiness Center Southeast in Jacksonville, Florida, and Fleet Readiness Center Southwest in San Diego, California. However, IDA was not successful in meeting with the program management side of NAVAIR. The Army facilitated a visit by the IDA team to U.S. Army Air and Missile Command in Huntsville, Alabama. During this visit, IDA had extensive discussions with the Program Executive Office (PEO) Aviation and the following program offices: Aviation Systems, Utility Helicopters, Apache Attack Helicopter, Fixed Wing, Cargo Helicopters, Unmanned Aircraft Systems, and Improved Turbine Engine/Future Vertical Lift. In addition, IDA met with two individuals in Army Logistics Command with oversight of the Army depots/arsenals. Those discussions, especially with program man-

agement personnel, were of extraordinary value to the project. They provided better understanding of the difficulties that acquisition program managers face in obtaining and retaining technical data and rights.

The organizations that IDA visited or had substantive phone conversations with to collect information on this project are displayed in Table 2.

Table 2. DOD Organizations Contacted by the IDA Team

Office	Type of Contact	Office	Type of Contact
Office of Secretary of Defense, General Council	Phone	Naval Air Systems Command, Command, Fleet Readiness Centers	Site visit
Headquarters, Department of Army, Acquisition, Logistics and Technology	Site visit	Naval Air Systems Command, Product Data Support Division	Site visit
Department of Air Force, Acquisition	Site visit	Naval Fleet Readiness Center, Southeast	Site visit
Dep. Asst. Sec. AF Logistics and Product Support (SAF/AQD)	Site visit	Naval Fleet Readiness Center, Southwest	Site visit
House Armed Services Committee	Phone	Army Materiel Command	Phone and site visit
Department of Air Force, General Council	Site visit	Army Materiel Command, Army Logistics Center	Site visit
Department of Navy, Research, Development and Acquisition	Phone	Army Aviation Program Executive Office	Site visit
Air Force Sustainment Center, Oklahoma City	Phone	Army Air and Missile Command, Industrial Operations	Site visit
Air Force Sustainment Center	Visit (in Pentagon)	Office of Assistant Secretary of Defense, Logistics and Readiness	Phone and Review of draft paper

While the project tasking focused specifically on DOD regulations and practices, IDA also had some discussions with individuals in private industry. These discussions included representatives from several large defense contractors, including some that were participating in the “813 panel” described previously. Discussions also took place with commercial firms that perform aviation MRO services and with industry associations.

This page intentionally blank.

2. Background and Context

A. IP Law and Defense Acquisition

Intellectual property is any product of the human intellect that the law protects from unauthorized use by others.[7] The term traditionally comprises four categories: patents, copyrights, trademarks, and trade secrets. Article 1, §8, of the Constitution of the United States provides that Congress shall have the power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Congress has exercised that power by passing laws that specify how the IP rights of private entities are handled in contractual relationships with the Federal government.

DOD practices regarding IP have varied over the years—a pendulum swinging back and forth between the government getting more rights and private industry retaining rights.[8] This dynamic reflects the conflicting interests of the government and its private industry suppliers. In the 1950s–1970s, when virtually all defense-unique equipment was developed under government contract, DOD had virtually unlimited rights. By the 1980s, there were concerns that having to relinquish all rights to the government would discourage firms from allowing DOD to access their technologies. The Packard Commission report on defense management[9] in 1984 reflected those concerns and included a set of recommendations regarding technical data and rights.

Before 1984, data rights pertaining to DOD contracts were not explicitly stated in statute, but mandated in regulation. That changed in 1984 with the Defense Procurement Reform Act, which included specific rights in technical data and procedures to validate the

---

7 As defined at Legal Information Institute (LII), "Intellectual Property," https://www.law.cornell.edu/wex/intellectual_property.

8 See Christine C. Trend, "Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts," *Public Contract Law Journal* 34, no. 2 (Winter 2005): 287–336.

9 David Packard (Chairman of the Blue Ribbon Panel) et al., *A Quest for Excellence: Final Report by the President's Blue Ribbon Commission on Defense Management* (Washington, DC: The White House, Office of the President of the United States June 1986), xi, 41, 113.

rights claimed by contractors. Those provisions became §2320 and §2321 of 10 U.S.C. and DOD was mandated to develop regulations to implement them.[10]

These regulations and subsequent statutes have changed frequently in attempts to achieve an appropriate balance between private rights in IP and the government's needs to operate and maintain its weapons systems. With the vast advances in technology, particularly the expanded use of commercial components and technology in DOD systems, stimulated by the "dual use" policies of the early 1990s, IP issues have become much more hotly contested because of the high value of technology-related data and software. Thus, industry has put pressure on DOD and Congress to limit the appetite for rights to IP data and software generated or used in DOD contracts.

Sections 2320 and 2321 of 10 U.S.C. that are most relevant to IP and technical data rights are discussed below and presented more fully in Appendix E. They address rights to technical data and prescribe a process for restricting and challenging restrictions on technical data rights. In addition, four sections of Title 10, §2460, §2464, §2466 and §2474, also summarized in Appendix E, are focused on requirements for certain organic core maintenance and repair capabilities to be maintained by the government through its depots, the percentage of depot-level maintenance and repair that can be performed by non-government personnel, and a categorization of depots that enable, among other things, public-private partnerships that do not count against restrictions on the percentage of depot-level maintenance and repair that can be performed by non-government personnel. These latter sections have relevance to the focus of Chapter 3, which is a review of "Department of Defense practices related to the procurement, management, and use of IP rights to facilitate competition in sustainment of weapon systems throughout their life-cycle," as called for by Subsection (a)(1)(B) of §875 of the FY 2016 NDAA.[11]

From the perspective of the sustainment of defense weapon systems, the IP of greatest interest is in two areas: (1) technical data and (2) computer software. In turn, "technical data (TD)" is defined (DFARS 222.227(a)(15)) as

> … recorded information, regardless of the form or method of the recording, of a scientific or technical nature (including computer software documentation). The term does not include computer software or data incidental to

[10] As documented by Trend ("Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts"), it took until 1987 with pressure from industry and Congress for DOD to publish draft regulations, which went through several perturbations as drafts, with a formal publication of regulations in 1995. DOD regulations are elaborated upon in Chapter 3.

[11] These sections of Title 10 are presented in greater detail in Appendix E.

contract administration, such as financial and/or management information.[12]

Technical data generally falls in the IP category of "trade secrets," while computer software is covered under "copyright."[13] Title 10 U.S.C. §2320 addresses "Rights in Technical Data" and §2321 addresses "Validation of Proprietary Data Restrictions," both of which are translated into the Federal Acquisition Regulations (FAR) and the Defense Federal Acquisition Regulations Supplement (DFARS).[14]

DOD requires IP data on the systems acquired for two basic reasons: (1) sustainment of systems, including maintenance, procurement of repair parts and components, and software updates, and (2) reprocurement. The demands for technical data and software and associated rights for these two purposes differ substantially. Sustaining maintenance requires maintenance manuals, drawings, parts lists and suppliers, software test equipment and standards, etc. On the other hand, if DOD wants reprocurements to be competitive, complete technical data packages (TDPs) that allow equipment to be manufactured from specifications is required. In fact, some maintenance activities may require design and manufacturing data in order to fabricate or reengineer parts that cannot be obtained from a supplier (or if it is more economical to do so).

In recognition of these needs, §2320 defines DOD's data rights based on the following principles:[15]

- Only the minimum necessary data and rights should be obtained.
- The government has licensing rights to all IP data and software developed with government funds or delivered under a government-funded contract. The type of

---

[12] The terms "intellectual property" and "technical data" are not defined consistently in the literature. In this paper, we will conform to the DFARS definitions: IP includes technical data, software, patents, and so forth, as noted previously. We will use the phrase "IP data" to include both technical data and software. There is a difference between the data itself and the rights granted regarding use of the data. It is not sufficient to have access to data without the right to use it for the required purposes, nor is it useful to have rights to data that are not available. Thus, we will employ the phrase "IP data and rights" to mean both having access to the required data and the necessary rights to use it as needed.

[13] See James P. McEwen et al., *IP and Technology in Government Contracts* (LexisNexis, 2014), 21–22, 28.

[14] Trend, "Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts," presents a succinct depiction of the origins of the FAR and DFARS, which originated in 1984, and their provisions for data rights, beginning in 1987. See also Department of Defense, *Intellectual Property: Navigating through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*, Version 1.1 (Washington, DC: Office of the Under Secretary for Defense for Acquisition, Technology, and Logistics, October 15, 2001), Appendix E.

[15] This summary is based on our review of 10 U.S.C. §2320. The intent here is to capture the essence,. although many subtleties and controversial aspects are not captured in this overview. A good, although

license granted to the government depends on the circumstances under which the data were developed or provided.

- Government rights are "limited" (data) or "restricted" (software) for commercial items and for technologies developed exclusively at private expense; however, even in those cases, the government has unlimited rights to data needed for operation and maintenance of the equipment, and data related to "form, fit and function (FFF)" of components. "Limited" or "restricted" means that the data or software may be used only by the government itself.
- When a component or technology used in a government contract was developed partially at private expense and partially at government expense, less-than-unlimited rights are granted. These are called "government purpose rights."
- For commercial items, the government's rights are generally the same as those granted to commercial customers (with some exceptions).

With unlimited rights, there are no restrictions whatever on what the government can do with the data, including the right to provide the data to third parties with no restrictions. Government purpose rights, as the term implies, allow the government to use the data for any government purpose, including release to third parties for such use, but the third parties cannot use the data for any other purpose and must return it to the government at the termination of the contract. In *all* cases, the government has unlimited rights to data needed for "operations, maintenance, installation, and training" (OMIT), and data specifying "form, fit and function (FFF)"[16] of components. However, when rights are "limited" or "restricted," the government may not provide such data to third parties for any purpose.[17]

---

somewhat dated, presentation on this topic can be found in Department of Defense, *Intellectual Property: Navigating through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*. The title is somewhat misleading because the paper covers the entire topic of IP in defense acquisition, not just acquisition of commercial items. See also "Data Rights Team Findings and Recommendations" (Oklahoma City, OK: Tinker Air Force Base, Air Force Sustainment Center, April 25, 2014).

16 DFARS (§252.227-7013) defines form, fit and function as "data that describes the required overall physical, functional, and performance characteristics (along with the qualification requirements, if applicable) of an item, component or process to the extent necessary to permit identification of physically and functionally interchangeable items." The DFARS does not provide a similar, more definitive characterization of OMIT data. See Defense Procurement and Acquisition Policy (DPAP), "Defense Federal Acquisition Regulation Supplement (DFARS) and Procedures, Guidance, and Information," http://www.acq.osd.mil/dpap/dars/dfarspgi/current/. (In the body of his paper, all subsequent references to DFARS sections are based on this website.)

17 With the exception that data may be provided to "covered government support contractors."

Furthermore, the law limits OMIT data with an important qualifier: release of "detailed manufacturing and process" data are not required. The DFARS defines those data as

> … technical data that describe the steps, sequences, and conditions of manufacturing, processing or assembly used by the manufacturer to produce an item or component or to perform a process.[18]

These rather complicated provisions are, in some cases, based on terms that are only minimally defined, and thus can be controversial. What specifically comprises OMIT data? What are "detailed manufacturing and process data"? What is a commercial item? Indeed, what is meant by "developed"?[19] These definitional issues have become the focus of specific disagreements between the DOD and the defense industry.

A key aspect of determining IP rights is the assertion of the funding source under which the IP was developed. A firm in bidding on a contract might assert that certain items were "Independently Developed at Private Expense" or "Jointly Developed with Contractor and Governments funds" and thus contend, respectively, that the IP associated with them is to be provided with either "limited" or "government purpose" rights, not "unlimited" rights. However, there are ambiguities in this process, first in determining whether a contractor or potential contractor developed the item truly with only its own funds or with a combination of its funds and the government's, and second in specifying the scope of the technical data or computer software itself.

These areas of ambiguity have resulted in difficulties for the DOD and firms in agreeing to terms in solicitations, contract negotiations, and contract implementation. These disagreements have led to contentious situations in which government interests in sustaining weapon systems have become embroiled in standoffs with the original equipment manufacturer (OEM), resulting in costly interim sole-source solutions that can endure for years. If such matters are not addressed early in the process—particularly in a competitive phase before a contractor is selected as the OEM—the DOD has diminished abilities to resolve them subsequently.

Another complexity of the law is that to exercise its rights to data or software, there must be a contractual requirement for the contractor to "deliver" the materials to the government. Thus, contracts must contain contract line items (CLINs), Contract Data Requirements Lists (CDRLs), and associated Data Item Descriptions (DIDs). These provisions are burdensome for program offices to develop and often cause difficulties in contract negotiations. To be successful in such negotiations, it is best if DOD's IP data and rights needs

---

[18] DFARS §252.227-7013 (a)(6).

[19] For example, see Trend, "Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts," on the term "developed," 300, 307–310.

are clearly stated in Requests for Proposals (RFPs). However, 10 U.S.C. §2320(a)(2)(F) prohibits making relinquishment of data rights that are developed at private expense a *condition* of contract award, except for OMIT and FFF data (and certain other exceptions). However, that does not preclude the government from identifying its minimum needs for IP and evaluating the impacts that proposed restrictive IP elements (data and/or computer software) have on the best value determination in source selection.[20]

B. Core Logistics Capabilities

Sections 2460, 2464, and 2466 of 10 U.S.C. contain provisions that govern the depot maintenance capabilities of the DOD that are pertinent to the issue of IP.[21]

The §2464 specifies that the military departments must maintain sufficient government-owned and operated logistics capabilities to "ensure a ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements." The provision states that the Secretary of Defense "shall assign such facilities sufficient workload to ensure cost efficiency and technical competence in peacetime while preserving the surge capacity and reconstitution capabilities necessary to support fully the strategic and contingency plans" of the Chairman, Joint Chiefs of Staff (CJCS).

These capabilities must be provided for any weapon system that the Secretary of Defense, in consultation with the Chairman, determines is necessary to "fulfill the strategic and contingency plans prepared by the Chairman of the Joint Chiefs of Staff." The "capabilities" for this provision are measured in "direct labor hours." The "Biennial Core Report" documenting DOD's performance on meeting these requirements must be submitted to Congress biennially.

Title 10 U.S.C. §2466, the so-called "50/50 rule," limits the military departments' contract expenditures for the performance of depot-level maintenance, in specifying that no more than 50 percent of the funding for depot maintenance workload may be contracted to private sources. This provision is measured in dollars and must be met each year unless a waiver is granted by the Secretary of Defense (cannot be delegated).[22] An annual report to Congress is required. As an indication of the magnitude of depot maintenance, DOD

---

[20] Brian Putnam, "Evaluating Intellectual Property and Data Rights in Competitive Environments" (Oklahoma City, OK: Tinker AFB Air Force Sustainment Center, September 23, 2015).

[21] These are sections of 10 U.S.C. Chapter 146, "Contracting for Performance of Civilian Commercial or Industrial Type Functions," which contains several other sections on depot-level maintenance and repair.

[22] Such waivers have rarely been granted.

spent about $31.1 billion on depot maintenance in FY 2015, with about $14.4 billion contracted in the private sector.[23]

The precise data requirements for DOD to perform depot maintenance are situation dependent and vary widely. OMIT and FFF data should provide most of what is needed. However, disagreements about what comprises OMIT data and what is covered by the "detailed manufacturing and process" exception has limited the data that DOD receives and its use—at times severely restricting DOD's abilities to meet depot sustainment for systems specified by DOD under the §2464 provision.[24]

More specifically, the Navy Fleet Readiness Center Southeast in Jacksonville, Florida, informed us that the following data are needed to support their depot maintenance work:[25]

> Repair data, Illustrated Parts Breakdown, data rights to firmware/software, maintenance manuals, and parts lists. Different facets of technical data have been issues:
>
> – Drawing packages
> – Data to calibrate equipment
> – Test data for automated test equipment and test parameters

An unresolved issue is how much of these data would be considered OMIT not subject to the "detailed manufacturing and process" exclusion.

C. Intellectual Property, Innovation, and Competition in Defense

In economics, generally it is recognized that innovation and competition are essential to prosperity and growth, but this basic tenet of our economic system can be at odds with DOD's rights to IP associated with its acquisitions.[26] Protection of IP is recognized as crucial to fostering innovation. Such protection limits what others can do with the data for at

---

23 Department of Defense, *Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal Years 2015·through 2017* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, May 2016), 4–5.

24 10 U.S.C. §2460, defines depot maintenance and has also been the subject of controversy regarding the inclusion of the phrase "fabrication of parts," which is not included in the current law but was in previous versions.

25 Interview with staff at the Navy Fleet Readiness Center Southeast, Jacksonville, Florida, July 19, 2016.

26 George Winborne, "Who's Killing the Goose?," paper presented at the American Bar Association (ABA) Section of Public Contract Law Program, Intellectual Property in Government Contracts—What You Didn't Learn in Kindergarten (Boston, MA, November 11–12, 2010), 1.

least some period of time in order for the inventor to appropriately benefit and be incentivized to bring the results to market.

Given the importance of fostering innovation for both national security and the economy overall, DOD policy is to honor the rights in IP resulting from private developments and limit its demands for IP rights for essential government purposes.[27] However, limitations on the availability of IP can result in reduced competition, which is a primary means to reduce costs of products and services to consumers. In DOD, competition is emphasized in both the Competition in Contracting Act of 1984 and the Weapon Systems Reform Act of 2009. Thus, DOD has stressed in policy the sometimes conflicting objectives of the need to foster innovation and the need to ensure competition in contracting for products and services.[28]

As noted previously, in the early years, DOD contracts had the right to disclose to anyone all data submitted under a contract. This was at a time when DOD essentially funded the entire underlying research and development (R&D) for the systems it contracted to be acquired. In the intervening years, DOD has relied increasingly on industry to fund development, and sought to attract commercial firms to provide innovative ideas and make greater use of commercial products in meeting its needs.[29] Because of the rapid growth in technology, especially in the commercial sectors, technology-related IP is extremely valuable. Commercial companies are reluctant to have their IP released as a condition of participating in defense business.[30] Neither is it in DOD's interest to discourage the inclusion of commercial technologies in DOD systems, particularly those that are the edge of the state of the art. This imperative leads to a natural and unavoidable conflict between obtaining the technical data needed by DOD and protecting industry's valuable IP. This fundamental conflict is at the heart of many of the issues DOD faces in IP.

---

27 Department of Defense, *Intellectual Property: Navigating through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*, 1–2.

28 See Department of Defense, "DOD, Innovation and Intellectual Property in Commercial and Proprietary Technologies" (Washington, DC: Office of the Under Secretary of Defense for Acquisition Technology and Logistics, January, 2016).

29 Defense Business Board, "Innovation: Attracting and Retaining the Best of the Private Sector, " Report 2014-02 (Washington, DC: Defense Business Board, 2014), 5.

30 This restriction also pertains to Defense [non-commercial] firms that contend that they spend their own private funds to develop defense technologies and that this is their IP and tech data, which is vital to their competitive business.

Modularity, Open Systems Architecture, and Competition

To foster greater competition, DOD has been encouraging the use of Modular Open Systems Architecture (MOSA) in its weapon systems.[31] The MOSA approach uses technical standards to support a modular, loosely coupled, cohesive system structure in which key interfaces within the system allow components to be added, modified, replaced, removed or supported by different vendors throughout a system's lifecycle, enhancing opportunities for competition and innovation. DOD policy encourages the maximum application of MOSA in DOD systems. However, MOSA has strong connections to IP. For the approach to function effectively, it is necessary to have the FFF technical data and the interfacing specifications for the modular item (subsystem, component, or part). However, technical data for the interior functioning of the item are not required (unless an organic repair capability for the item is determined to be needed). The key problem is that determining what data should be available to others and what are proprietary to the system developer can become contentious. Moreover, it is generally understood that the upfront costs of designing a system based on MOSA can be considerably more costly to the OEM than using existing proprietary approaches, but the beneficiaries of a MOSA-based system are the government and prospective competitors, usually at the subsystem and component level.

Many of the concerns regarding DOD accessing IP to stimulate competition and also protecting it to encourage innovation are driven by the fact that the defense market is a peculiar industry segment—characterized as a "dual monopoly" market. This situation—which drives much of DOD's IP concerns—results from the manner in which defense systems are developed and acquired, which is the topic of the next section.

D. Characteristics of the Defense "Marketplace"

Note: See Appendix F for an elaboration on the defense economic market as it pertains to the acquisition of products and services.

The unique characteristics of the market environment for DOD acquisition have a strong influence on IP issues. Although DOD procures thousands of kinds of equipment through thousands of diverse suppliers, most large weapon systems (aircraft, ships, land combat equipment, etc.) are supplied by a small number of very large companies. This situation is the result of consolidation within the defense industrial sector that has been in progress for more than 40 years and has accelerated since the end of the Cold War in 1989. The result is that, for many key systems, there are only two or three feasible sources of supply. Furthermore, once a major weapon system has entered full-scale development, there is inevitably only one supplier—i.e., a sole-source monopoly (Appendix F describes

[31] See Appendix E for discussion of DOD's emphasis on MOSA under its Better Buying Power (BBP) initiative.

this monopoly environment in economic terms). Furthermore, that state will exist for as long as the system is in the DOD inventory, which can be a long time. These characteristics mean that the free-market forces of competition are substantially weakened. However, unlike public utilities for example, the laws that govern the acquisition of equipment for DOD have not been formulated to recognize this partial monopoly situation.

Also different from most other market environments, the DOD funds much of the underlying research and development through contracts with private firms (or grants to universities) and funds the development contracts for systems it acquires. Recently DOD has acquired systems, such as unmanned aerial vehicles (UAVs) and some ground robotics, that have been developed either exclusively or largely by the internal investments of private companies—with the firms claiming that the DOD has limited rights to the associated IP. This has led to some trying discussions between these firms and DOD when DOD has attempted to obtain technical data and software with appropriate rights to sustain these systems.

Once a monopoly situation exists for a system, the sole-source provider has a great deal of leverage in negotiations with the government, in particular for IP data and rights. Thus, if DOD programs want to obtain IP data and rights on favorable terms, they must exercise great care to ensure that they have established in contracts the necessary data delivery and rights early in the acquisition process when there is competition between the potential vendors. However, that approach is not simple. To see why, it is useful to understand an overview of the DOD acquisition process.

Once a requirement for a new system is established and the alternatives for solutions fully explored, the type of system and its basic characteristics can be specified. That occurs at Milestone A of the acquisition process, which denotes entry into actual development of hardware and software—the Technology Maturation and Risk Reduction (TMRR) phase. This phase is normally competitive with two or three competitors—today for major platforms, usually only two. At the end of this phase, the acquisition enters into Milestone B when a competition is held through the release of a RFP to select the best design to enter the next phase, which is Engineering and Manufacturing Development (EMD).[32] Once an EMD contract is awarded, DOD will face a sole-source situation that will be difficult to change, so this competition is the key point in time to ensure that provisions to obtain all technical data and software delivery and associated rights to sustain the system for its entire life are included.

However, at Milestone A and even Milestone B, the system is still developmental and there are uncertainties regarding its technical details. This can affect how much can be specified regarding the technical data needed for future sustainment. But the situation is

[32] Never in recent history has more than one design for a major weapon system been carried into EMD for a major platform and very rarely for other major acquisitions.

even more fraught, because there is no guarantee that the competitors for the EMD contract will agree to provide the necessary data and rights under the conditions desired by DOD. It was noted previously that the law prohibits access to IP rights being a condition for contract award. It can be used as an evaluation factor; however, it has often been the case that other factors, such as performance and procurement costs, are deemed more important in the source selection. These realities of the defense market are fundamental to many of the IP problems that plague DOD.[33]

E. IP Rights and Defense Acquisition

Long-term business interests influence how defense firms posture themselves on IP data and rights. In formulating their bids for defense weapon systems contracts, potential OEM contractors have increasingly seen that revenues from downstream sustainment and subsequent system upgrades are fundamental to their business.[34] Given the long-term value of these contracts, firms bidding on them will often take an "aggressive" approach, in which they will bid low on early contracts with the assumption that they will be able to recoup any loss and reap substantial profits by providing support for the system over many years.[35] Therefore, a more aggressive policy to acquire technical data and software rights early in the acquisition process in order to facilitate future competition in sustainment by DOD will likely require a higher payment upfront for development and procurement, since firms will have to risk not gaining future revenues in sustainment. From the acquisition program manager's perspective, this idea is fraught. The long-term savings cannot be guaranteed and the costs for the IP data and rights must be paid now. This is particularly onerous for the PMO when there is heavy pressure on program budgets to execute and deliver desired performance within cost and schedule constraints. The future savings, on the other hand, will accrue in future operations and maintenance budgets, probably long after the acquisition management has moved on.

---

[33] As discussed later in this paper, the recent example of the KC-46 tanker shows that under the right circumstances—with the right type of support from high levels and competition amongst potential vendors—DOD can negotiate the IP data and rights needed for future sustainment. However, earlier examples, such as the P-8, demonstrate how difficult this can be, especially if there is no competing vendor.

[34] See Tom D. Miller, *The Defense Sustainment Industrial Base – A Primer* (The Brookings Institution, June 30, 2010), 25, 29.

[35] This "conventional wisdom" has long been understood as a reality of defense acquisition. When engaging potential suppliers and subcontractors, an OEM will emphasize the need for these potential partners to likewise be aggressive in their front-end costs with the prospect that they as the winning team will achieve a long-term "franchise" for the subsequent systems acquisition and support. Recent specific examples include the KC-46 (see Loren Thompson, "Five Reasons Boeing's Big Bet on Air Force Tankers Will Pay Off Handsomely," *Forbes*, August 19, 2016) and the B-21 long-range strike bomber (see Valerie Insinna, "Game Over: GAO Protest Reveals Cost Was Deciding Factor in B-21 Contest," *Defense News*, October 25, 2016).

DOD acquisition contracts typically deal with the uncertainty regarding future technical data needs by inclusion of "deferred ordering" clauses. These are not without issues; industry sees these as potentially open-ended and requiring onerous storage and maintenance of all contract data for many years. Moreover, industry generally is reticent to agree to such provisions since it is understood that the primary motives of the government are to facilitate competitive reprocurement and sustainment and/or to establish in-house depot maintenance capabilities, both of which potentially reduce the OEM's prospects for future profits from sustainment.[36]

F. Maintenance of DOD "Commercial Derivative Aircraft (CDA)" and Federal Aviation Administration (FAA) Procedures

DOD possesses a substantial number of aircraft, known as "commercial derivative aircraft," that are basically the same as commercial aircraft operating in the civil aviation system.[37] The FAA controls the design, production, and maintenance of such aircraft when owned by private companies. The applicable regulations are codified in the Code of Federal Regulations (CFR), Title 14 (aeronautics and space), which are issued to ensure that the aircraft, aircraft engine, propeller, and their modification or replacement parts meet "airworthiness aircraft standards." A key aspect of the FAA regulations is the requirement that for any aircraft with an airworthiness certificate, the vendor must make available the technical data needed for maintenance and repair. These data must be kept up to date and are at a level to allow alternative sources of repair and supply to sustain the aircraft.

DOD aircraft, regardless of type, however, are operated as "public use aircraft owned by the armed services," which are explicitly not subject to FAA regulations, and generally do not possess FAA standard certificates of airworthiness. Therefore, for these aircraft, it has been argued that the requirement of the aircraft vendor to divulge the details of technical data required by the FAA does not pertain. This issue has been an ongoing point of contention between certain commercial MRO firms seeking to access DOD sustainment business and defense aircraft vendors seeking to protect their IP and their sustainment business. However, it is sometimes[38] possible for DOD to obtain FAA certificates for its CDA

---

[36] See Department of Defense, *Intellectual Property: Navigating Through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*, 25–26.

[37] FAA Advisory Circular No. 20-169 defines "commercial derivative aircraft" for FAA purposes. Not all DOD aircraft that are based on commercial designs qualify under the FAA definition. Some of these aircraft are essentially the same as their commercial counterparts and are used in much the same way—carrying passengers and cargo. Others are much more substantially modified platforms for substantially different missions, such as the KC-46 tanker or the P-8A Poseidon maritime patrol aircraft. See Federal Aviation Administration, "Guidance for Certification of Military and Special Mission Modifications and Equipment for Commercial Derivative Aircraft (CDA)," Advisory Circular AC No: 20-169 (Washington, DC: U.S. Department of Transportation, September 30, 2010).

[38] See Appendix C for more information regarding when the certification might be obtained.

should it choose to do so, and in such cases DOD can make use of the maintenance data that OEMs must provide to the owners of the aircraft. These data rights allow DOD to provide the data to third-party companies providing parts and/or maintenance support for the aircraft. In addition, even if a DOD aircraft does not possess an FAA airworthiness certificate, many of its parts may be identical to commercial aircraft, and for such parts, DOD may be able to use FAA-approved replacement parts.[39] Some third-party MROs contend that DOD could make much greater use of these approaches, which would allow them to compete more extensively for DOD sustainment business.[40]

This is a complex subject, which this project could only partially explore. The issues that DOD sustainment organizations raise regarding IP and sustainment are largely related to their ability to conduct maintenance operations in DOD depots. For DOD, the use of third-party MROs appears to be, at best, a secondary concern. As discussed in Chapter 4, there are some specific examples for which use of non-OEM MROs has resulted in substantial savings for individual systems or subsystems. To what extent such practices could be expanded as a more general approach for CDA raises issues concerning systems engineering assessments, depot workloads related to the 50/50 rule, and core logistics capabilities. Additional discussion is provided in Appendix C.

G. Summary

This chapter has covered a number of topics in order to provide a context regarding IP data and rights pertaining to the sustainment of defense weapons systems. This overview shows that IP data and rights are crucial elements of the defense acquisition strategy for both the DOD and the industries that provide the weapons capabilities it needs. There are complex legal, policy, and organizational issues in implementing the policies. The next chapter elaborates on DOD policies and related implementation regulations and documents.

---

[39] Depending on whether the FAA qualification standards are essentially the same as DOD's.

[40] Briefing to IDA research team by First Aviation Services Inc., May 5, 2016.

This page intentionally blank.

3. DOD Policies, Regulations, and Guidance

This chapter provides a summary review of "Department of Defense regulations, practices, and sustainment requirements related to Government access to and use of intellectual property rights of private sector firms," as called for by Subsection (a)(1)(A) of Section 875 of the FY 2016 NDAA. More expansive coverage of existing DOD policies and guidance pertaining to IP data and rights is found in Appendix E. This chapter is divided into two sections. The first section provides a summary of the policy and guidance pertaining to IP data rights and access. The second section summarizes practice regarding IP, as prescribed by DOD policy and guidance.

A. Policy and Guidance Landscape

There is no shortage of law, policy, and guidance pertaining to IP data and rights. Figure 1 depicts the key policy and guidance documents that establish the environment regarding IP data and rights within which DOD acquisition programs must operate. The DOD components also issue regulations pertaining to IP data and rights, but these generally flow from and elaborate upon OSD policy and guidance.

1. DOD Regulations

The provisions in the U.S.C. outlined in the previous chapter are translated into more detailed provisions in the FAR and the DFARS. We have focused on the DFARS because of its greater specificity to DOD. Two parts of the DFARS—227.71-Rights in Technical Data and 227.72-Rights in Computer Software and Computer Software Documentation—contain material relevant to this review. DFARS 227.71 prescribes "policies and procedures for the acquisition of technical data and the rights to use, modify, reproduce, release, perform, display, or disclose technical data." DFARS 227.72 prescribes "policies and procedures for the acquisition of computer software and computer software documentation and the rights to use, modify, reproduce, release, perform, display, or disclose such software or documentation." Also included are specific clauses that can be added to contracts to address various technical data and rights topics.

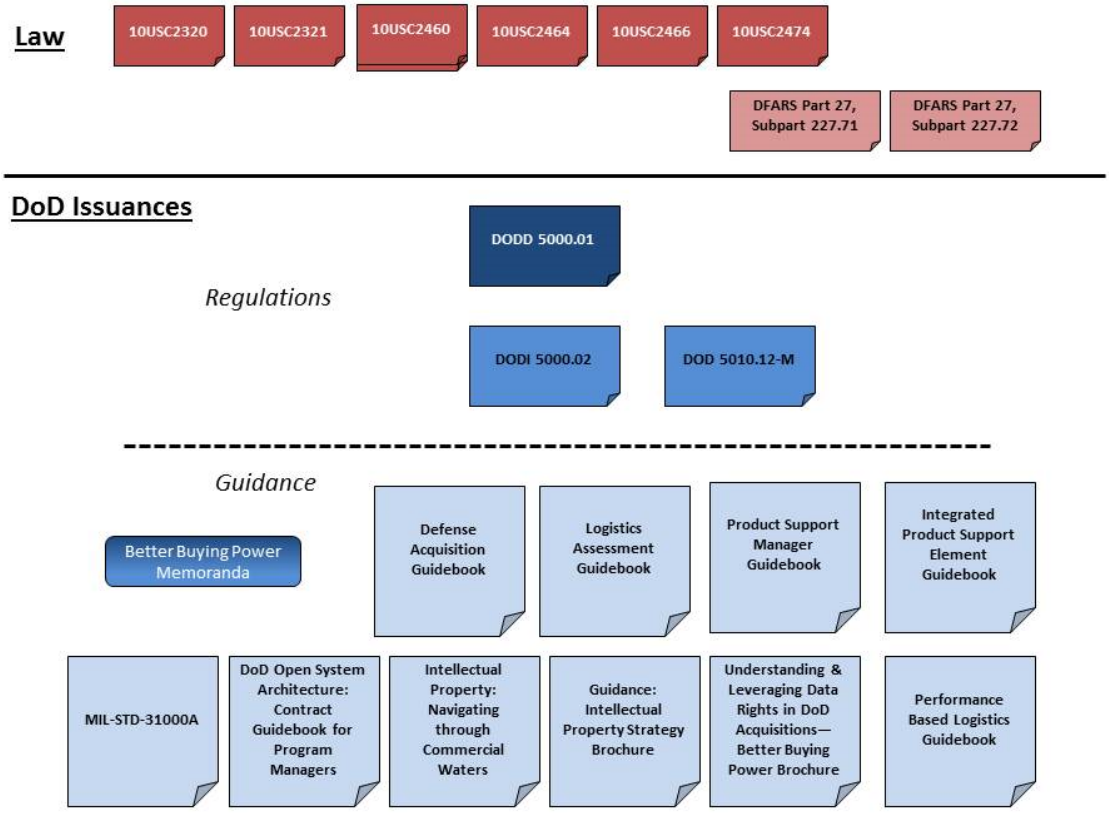


Figure 1. The IP-related Policy and Guidance Landscape for DOD Programs

DOD regulations are issued in several forms—Directives (DODD), Instructions (DODI), Manuals, and Administrative Instructions. There are also a number of issuances, such as guidebooks and best practices, which are not binding on the military departments, but rather advisory in nature. Intellectual property matters are addressed in several of these DOD regulations in varying levels of detail. The IP content of greatest interest to this review centers on the acquisition of DOD systems. Consequently, this review focuses on acquisition regulations and is limited to those of greatest relevance.

The premiere acquisition regulation for the Department, DODD 5000.01[41] does not contain any language pertaining to IP and technical data rights. However, its companion regulation, DODI 5000.02, Operation of the Defense Acquisition System, does. The current January 2015 version of DODI 5000.02 first mentions IP within the context of a program's Acquisition Strategy.[42] An intellectual property strategy (IPS) is one of a number

---

41 Department of Defense, "The Defense Acquisition System." Department of Defense Directive (DODD) 5000.01 (Washington, DC: USDAT&L, May 12, 2003, Certified Current as of November 20, 2007).

42 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, January 7, 2015), 18.

of statutory requirements that are to be addressed through the Acquisition Strategy, which is required for the first time at Milestone A.[43] As part of lifecycle sustainment planning, program management develops a product support strategy, which as one of its minimum requirements includes "the necessary intellectual property (IP) deliverables and associated license rights, consistent with and integrated with the program IP Strategy."[44] To ensure the continued support of the system being acquired, the IP Strategy "becomes part of the Life-Cycle Sustainment Plan (LCSP) during Operations and Support (O&S)."[45] The IP Strategy is a required annex of the LCSP and is to be "updated appropriately during the O&S Phase."[46]

In reviewing the three versions preceding the current DODI 5000.02, we found that coverage of IP has evolved considerably. Thus, it should be expected that acquisition programs' approaches to IP rights may vary depending on the when the program started. For example, the 2003 issuance of DODI 5000.02 does not contain any reference to IP or technical data rights.[47] In the intervening years, the DODI 5000.02 issued in December 2008 contains less coverage of topics related to IP than its 2013 successor, but much more coverage than the 2003 version. It is noteworthy that, in the 2008 version, IP rights were not addressed explicitly in the lifecycle sustainment context, where they are most critical. Of further note, some terminology differences also exist between the 2008 and more recent versions. The 2008 version of the DODI 5000.02 calls for a Technology Development Strategy (TDS), in which a Data Management Strategy (DMS) is one of a number of content areas to be documented, although elsewhere a DMS is identified as a statutory requirement for major defense acquisition programs, as part of a TDS or Acquisition Strategy, at Milestones A, B, C, and the Full-Rate Production (FRP) review.[48] The only other related coverage is found in the Systems Engineering enclosure under the topic of "Data Management and Technical Data Rights."[49] An Interim DODI 5000.02, issued 25 November 2013,

---

43 Ibid., 17, 47–48.

44 Ibid., 112.

45 Ibid., 48.

46 Ibid., 116. The instruction does not state specifically when the IP Strategy should be included as an annex to the LCSP.

47 Department of Defense, "Operation of the Defense Acquisition System," DODI 5000.2, 2015.

48 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, December 8, 2008), 17, 35. For ACAT II programs, a data management strategy is a statutory requirement and is to be a part of the Acquisition Strategy at Milestone B, Milestone C, and FRP Design Review. See Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2008, 38.

49 Ibid., 79.

contains very similar content to the current issuance, except for a nuance in the relationship between the IPS and the Acquisition Strategy and LCSP.[50] (See Appendix E for details.)

This review of DODI 5000.02 versions shows that the priority placed by DOD on IP data and rights has evolved significantly over the past 12 years. The importance of IP is stressed more strongly in the two most recent versions of the instruction. These same versions emphasize the importance of IP throughout the lifecycle. Consequently, there is a possibility that at least some more "mature" acquisition programs (with a Milestone B prior to the 2013 interim issuance of DODI 5000.02) may not have planned as thoroughly or specifically for IP rights and deliverables to support the sustainment phases of the programs as was required subsequently.

The purpose of DOD 5010.12-M is

> … to provide[s] a uniform approach to the acquisition and management of data required from contractors. The procedures are intended to provide data management tools necessary to minimize and standardize data requirements that will be included in DOD contracts.[51]

This manual provides a resource for programs' seeking guidance on general procedures to follow pertaining to the identification and acquisition of required technical data; however, the fact that the document is more than two decades old decreases its relevance. Indeed few recent references to it have been seen. Better Buying Power (BBP) 2.0 called for this manual to be replaced, and later a BBP 3.0 memorandum seemed to indicate that DOD 5010.12-M had been updated.[52] However, it was confirmed through the DOD Issuances website that the 1993 version remains current.[53]

---

[50] The Interim DODI 5000.02 indicates that the IPS is to be "summarized" in these two important program documents; the IPS is also not formally called out as an annex of the LSCP. See Department of Defense, "Operation of the Defense Acquisition System," Interim Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, November 25, 2013), 52.

[51] Department of Defense, *Procedures for the Acquisition and Management of Technical Data*, DOD 5010.12-M (Washington, DC: Assistant Secretary of Defense (Production and Logistics). May 1993), 13.

[52] For more information on the evolution of Better Buying Power and its initiatives related to intellectual property and technical data rights and access, see Appendix F.

[53] Department of Defense, "Implementation Directive for Better Buying Power 2.0—Achieving Greater Efficiency and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 24, 2013), 18; Department of Defense, "Implementation Directive for Better Buying Power 3.0—Achieving Dominant Capabilities through Technical Excellence and Innovation," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 9, 2015), 14.

2. DOD Guidance and Handbooks

The *Defense Acquisition Guidebook* is a reference resource that delivers tailorable best practices to the defense acquisition workforce.[54] IP is treated in considerable detail in three chapters of this guidebook: Chapter 2—Program Strategies, Chapter 4—Systems Engineering, and Chapter 5—Life-Cycle Logistics.

Numerous additional documents provide guidance for acquisition programs on IP. Several documents—Integrated Product Support Element Guidebook, Product Support Manager's Guidebook, Logistics Assessment Guidebook—contain content related to technical data and its role as an integrated product support element. As an integrated product support element, the objective of technical data is to

> "Identify, plan, validate, resource and implement management actions to develop and acquire information to:
>
> – Operate, maintain, train on the equipment to maximize its effectiveness and availability;
>
> – Effectively catalog and acquire spare/ repair parts, support equipment, and all classes of supply;
>
> – Define the configuration baseline of the system (hardware and software) to effectively support the Warfighter with the best capability at the time it is needed."[55]

The Diminishing Manufacturing Sources and Material Shortages (DMSMS) guidebook (SD-22)[56] stresses the availability for adequate technical data to identify or fabricate and qualify replacements for obsolete parts in DOD weapon systems.

As previously mentioned, it is recognized that the DOD components issue additional regulations pertaining to IP. A particularly notable example is the Air Force's Office of the Staff Judge Advocate, Space and Missile Systems Center, which recently issued its 7th edition of a detailed guidance document.[57]

---

54 Defense Acquisition University Website, *Defense Acquisition Guidebook*, "Foreword," accessed July 7, 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=511646&lang=en-US.

55 Defense Acquisition University, *Integrated Product Support Element Guidebook* (Washington, DC: Defense Acquisition University, December 2011), 344.

56 Department of Defense, *Diminishing Manufacturing Sources and Material Shortages (DMSMS): A Guidebook of Best Practices for Implementing a Robust DMSMS Management Program*, SD-22 (Fort Belvoir, VA: Defense Standardization Program Office, February 2015), 26, 32.

57 Air Force Space Command, "Acquiring and Enforcing the Government's Rights to Technical Data and Computer Software Under Department of Defense Contracts: A Practical Handbook for Acquisition Professionals," 7th ed. (Colorado Springs, CO: Peterson Air Force Base, Office of the Staff Judge Advocate, Space and Missile Center, August 2015).

B. IP-Related Policy and Guidance in the Acquisition Life Cycle

Law, policy, and guidance clearly establish that IP needs to be considered from very early in an acquisition program and throughout its life cycle. Based upon the review of the policy and guidance summarized in the previous section, this section considers what those provisions mean for an acquisition program. The following aligns various key IP data and rights activities with the phases and major milestones of the defense acquisition system.

1. Materiel Solution Analysis (MSA) Phase (Ends with Milestone A)

The objective of the MSA phase is to conduct the analysis and other activities needed to choose the concept for the product that will be acquired, to translate operational needs into system-specific requirements, and to support a decision on the acquisition strategy for the system. Per DODI 5000.02, an IPS is to be included in a program's Acquisition Strategy as a key document first required at Milestone A. The 2011 *Integrated Product Support Element Guidebook* specifies that an IPS "should reflect the assessment and integration of the data rights requirements across all the functional disciplines required to develop, manufacture and sustain the system over the life cycle. Restricted use and intellectual property rights should be minimized."[58] A 2011 sample outline for an Acquisition Strategy contains a section titled "Technical Data Rights Strategy (formerly the Data Management Strategy)." The annotation of this section indicates that the Technical Data Rights strategy should be summarized, including:

- Analysis of the data required to design and manufacture, and sustain the system as well as to support recompetition for production, sustainment, or upgrade …
- How the program will provide for rights, access, or delivery of technical data the government requires for the system's total lifecycle sustainment …
- The business case analysis calculation … for using open systems architectures and acquiring technical data rights …
- The cost benefit analysis of including a priced contract option for the future delivery of technical data and IP rights not acquired upon initial contract award; and
- Analysis of the risk that the contractor may assert limitations on government's use and release of data ….[59]

---

[58] Defense Acquisition University, *Integrated Product Support Element Guidebook*, 369.

[59] "Technology Development Strategy [or] Acquisition Strategy for [Program Name] [Sample Outline]," April 20, 2011, 12, accessed 30 September 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=717918&lang=en-US.

One of the key considerations for program management in preparation for Milestone A, is "the efficiency and effectiveness of the proposed acquisition strategy (including the contracting strategy and the intellectual property (IP) strategy) in light of the program risks and risk mitigation strategies."[60] While a program is to begin developing its sustainment approach and its initial LCSP during the MSA phase, DODI 5000.02 does not indicate that the IPS is to become a part of the LCSP until after Milestone C.[61]

2. Technology Maturation and Risk Reduction (TMRR) Phase (Ends at Milestone B)

The objective of the TMRR phase "is to reduce technology, engineering, integration, and life-cycle cost risk to the point that a decision to contract for EMD can be made with confidence in successful program execution for development, production, and sustainment."[62] "Planning for the sustainment phase should begin in this phase, when requirements trades and early design decisions are still occurring."[63] IP data and rights are factors that inform and are informed by sustainment planning.

Some conflicting guidance exists regarding the status of the IPS by Milestone B. DODI 5000.02 indicates that a program's IPS will be updated during the TMRR phase "to ensure the ability to compete future sustainment efforts consistent with the Acquisition Strategy to include competition for spares and depot repair."[64] A table containing the assessment criteria for the technical data integrated product support element in the 2011 *Logistics Assessment Guidebook* appears to indicate that the IPS (although it is referred to by the previous label, Technical Data Management Strategy) is to be finalized by Milestone B and after that point it is continuously updated.[65] This guidebook identifies further activities that should be either in process or finalized by Milestone B. One of the in-process activities is a business case analysis focused on what the purchase of technical data and rights would entail in terms of cost and benefits, while one of the activities to be finalized is the contract-specific technical data elements.[66]

---

60 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 18.

61 Ibid., 48.

62 Ibid., 19.

63 Ibid., 21.

64 Ibid., 20.

65 Department of Defense, *Logistics Assessment Guidebook* (Washington, DC: USDAT&L, 2011), 42.

66 Ibid., 42–43.

3. Engineering and Manufacturing Development (EMD) Phase

The objective of the EMD phase "is to develop, build, and test a product to verify that all operational and derived requirements have been met, and to support production or deployment decisions."[67] This is the phase during which the detailed design of the system takes place and is completed. This is also the phase during which "the Program Manager will finalize designs for product support elements and integrate them into a comprehensive product support package."[68] The program's IPS continues to be updated. The EMD phase ends at Milestone C—decision for low-rate initial production (LRIP).

The 2011 *Logistics Assessment Guidebook* indicates that the following activities should be finalized by Milestone C:

- The business case analysis on what technical data to purchase is complete
- The specification of technical data delivery and rights has been captured in contracting mechanisms
- A data management plan has been developed and a formal configuration management process is in place to manage technical data.[69]

Validation and verification of technical manuals is to be in process by Milestone C.[70]

4. Production and Deployment Phase (P&D) (Includes IOC and FRP)

The objective of the P&D phase is to "produce and deliver requirements-compliant products to receiving military organizations."[71] By the time of Full Rate Production, most of the technical data-related activities are to be finalized, although some, such as the IPS, contracts that contain the appropriate technical data rights and access language, etc., continue to be updated.[72]

---

67 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 25.

68 Ibid., 26.

69 Department of Defense, *Logistics Assessment Guidebook*, 42–43.

70 Ibid., 43.

71 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 28.

72 Department of Defense, *Logistics Assessment Guidebook*, 42–43.

5. Operations and Support (O&S) Phase

The objective of the O&S phase is to "execute the product support strategy, satisfy materiel readiness and operational support performance requirements, and sustain the system over its life cycle (to include disposal)."[73] While DODI 5000.02 indicates that the IP strategy is to become part of the LCSP during the O&S phase,[74] other documents, such as the 2011 *Logistics Assessment Guidebook*, suggest that the IPS should be incorporated in the LCSP earlier in the program.[75]

> During this phase, the Program Manager will deploy the product support package and monitor its performance according to the LCSP. The LCSP may include time-phased transitions between commercial, organic, and partnered product support providers. The Program Manager will ensure resources are programmed and necessary IP deliverables and associated license rights, tools, equipment, and facilities are acquired to support each of the levels of maintenance that will provide product support; and will establish necessary organic depot maintenance capability in compliance with statute[76] and the LCSP.[77]

While this phase is the one in which sustainment begins, the program has to have done the necessary assessments, planning, and incorporation of requirements into contracts earlier in the program lifecycle to ensure that the IP data and rights have been acquired to facilitate sustainment of the system.

C. Observations Regarding Policy and Guidance

DOD policy and guidance pertaining to IP data and rights is quite robust and generally adhere to the intent of the provisions established in U.S.C.[78] However, given the legislative changes that have been made iteratively since 1984, when Congress first explicitly articulated legislation on IP rights in the National Defense Authorization Act, there are some

---

[73] Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 48.

[74] No exact point in the process is specified.

[75] Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 48; Department of Defense, *Logistics Assessment Guidebook*, 42.

[76] Per 10 U.S.C. Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2464 – Core Logistics Capabilities, *core depot-level maintenance and repair capabilities*, organic depot-level maintenance, and repair capability are to be established within 4 years after reaching initial operational capability (IOC).

[77] Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 29.

[78] However, DOD lags in implementing some provisions of the law—specifically, the changes stated in §2321 of the FY 2011 NDAA.

duplications and inconsistencies in content across documents and ambiguities in terminology and descriptions, some of which can create problems in implementation.

The volume of IP data- and rights-related policy and guidance, while a positive, might be overwhelming for understaffed program management offices. The IP demands must be considered in consonance with other requirements—such as enabling competition, promoting innovation, ensuring the ability to perform organic depot-level maintenance for core defined capabilities, and use of performance-based logistics (PBL) contracts. For example, if a program manager wants the system to be able to take maximum advantage of innovations offered by a contractor, then he or she might want to be more selective in requiring delivery and rights to data that the contractor desires to protect. If, on the other hand, the PM is more concerned about establishing viable core depot-maintenance capabilities and ensuring DOD's ability to compete for sustainment parts and services in the future, then he or she will be more insistent on requiring delivery of technical data with the necessary rights to permit their release to third parties. If the program has pursued a PBL approach, the PBL contractor is likely to resist providing technical data and rights that could pose a threat to the continued support by that contractor.

Given this environment, program management must make tradeoffs. The objective should be to balance the many competing priorities the program faces; however, as explained in the following chapter on practice, achieving a balance can be difficult.

This page intentionally blank.

4. DOD Practices and Issues Regarding IP

A. Overview

The project team focused on how DOD's approach to IP is developed and implemented, with a focus on weapon systems sustainment. As noted in Chapter 2, DOD practices regarding IP have varied over the years—a pendulum swinging back and forth between the government receiving more rights and private industry retaining rights.[79] This dynamic reflects the conflicting interests of the government and its private industry suppliers. In the days when virtually all defense technology and equipment was developed under government contract, DOD had virtually unlimited rights, but with the acceleration of civilian technology developments, DOD systems have been drawing increasingly from privately developed components and technologies.[80] With that evolution, DOD's processes concerning access to IP have become increasingly complex, as the contracting firms (OEMs) have sought to guard their competitive positions. Specifically, efforts of the DOD to obtain IP data and rights, in order to sustain its weapon systems and to reduce sustainment costs through competition, have conflicted with industry. Industry claims that the threat of such competition discourages their proposing the use of advanced proprietary technologies in DOD weapon systems developments. This is the context in which the DOD processes for identifying and obtaining IP data and rights for sustainment have evolved.

Adding additional complexity is the fact that the DOD is mandated to provide for the sustainment of certain "core" weapon systems using government-owned depot facilities and a government-only workforce to meet the requirements of §2464 of Title 10 (as discussed in Chapter 2). This use of government assets for such sustainment contrasts directly with the DOD's reliance on contractors for the development and production of weapon systems. This adds a third party into the mix of competing interests—the DOD depots.

Complicating the relationships further, commercial MROs and parts suppliers contend that they should be able to compete for DOD's sustainment work, especially in the aviation sector. These firms, in particular, want to maintain and supply parts for DOD's "commercial derivative" aircraft and associated systems and components—aircraft for which the airframe, engines, and other major systems are derived from aircraft developed and employed generally for commercial transport.

---

[79] See Trend, "Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts."

[80] Not all such research is commercially related. DOD contractors develop defense-related technology via Independent Research & Development (IR&D) or from strictly privately funded investment. IR&D expenditures can be wholly or partially offset as a "general and administrative expenses" by DOD contractors, and, despite that reimbursement, IP rights are retained by the contractor.

Within the policies of OSD and the military departments, the program management office is responsible for determining the sustainment strategy for a weapon system and providing for the implementation of that strategy in contracts and fiscal plans. These intersecting relationships are depicted in Figure 2.

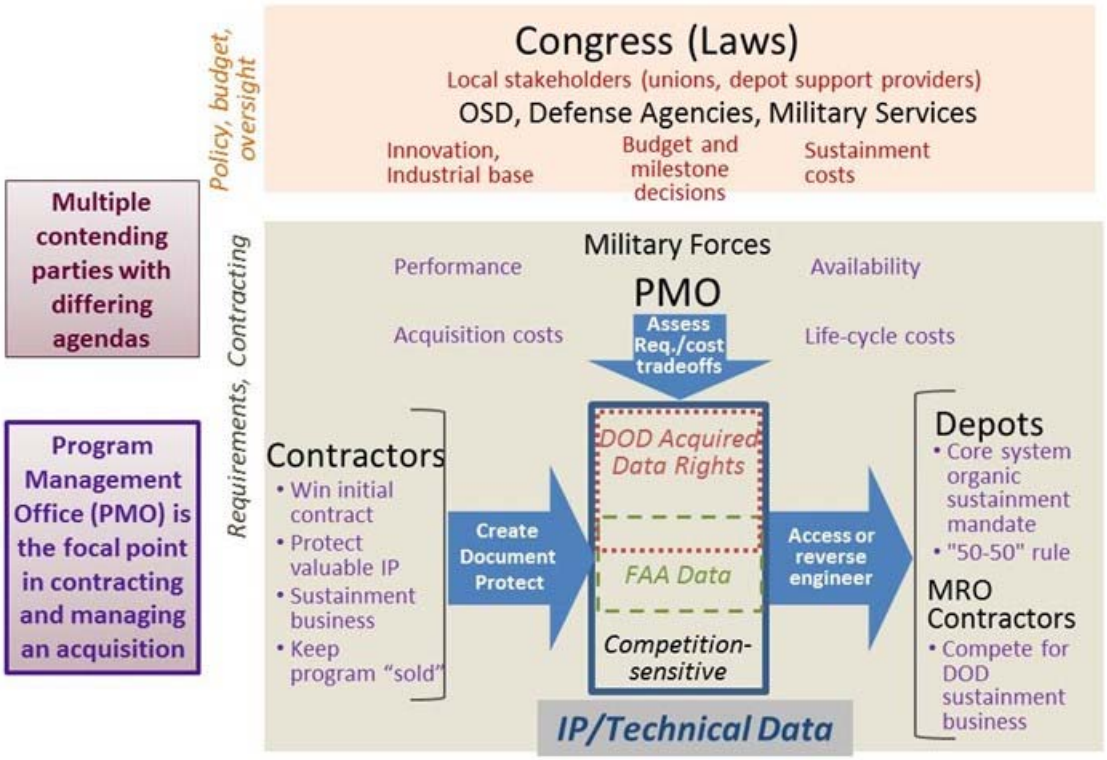


Figure 2. Interrelationships and Stakeholders in IP and Sustainment

Those in DOD responsible for formulating policies and implementing them in decisions on the sustainment of weapon systems must balance among these competing interests in seeking to achieve the best results in sustainment of DOD weapons systems. As explained in this chapter, effectively achieving this balance has been difficult.

B. Assessment of IP Practices

Drawing on our review of DOD regulations in Chapter 3, the project team investigated whether current practices aligned with regulations and guidance. According to DODI 5000.02, Milestone A is the first opportunity to address IP issues in the acquisition process. As stated in the preceding chapter, an IP strategy is required at Milestone A as part of the Acquisition Strategy. Normally, at this stage of the process, the system design is largely conceptual and subject to competition among a small number of alternative contractors. Thus, it is unrealistic to expect the IP section of the Acquisition Strategy to contain much

more than an outline of the IP plan. By Milestone B, the system design should be determined, though many details at the component and sub-component level will still need to be decided. The EMD contract should be ready to sign, if not already signed, so the IP strategy should be mostly in place. After the Milestone C LRIP decision, the LCSP should include an IP strategy annex, which should contain substantially greater detail than the IP section of the Acquisition Strategy.[81]

The IDA team reviewed several Acquisition Strategy documents for their IP content and found in general that they contain appropriate *objectives* to obtain technical data to meet maintenance requirements and, to a lesser extent, to support competition in sustainment. However, no matter how complete such statements of objectives in the Acquisition Strategy are, there is no guarantee that corresponding deliverables will be successfully negotiated in contracts. In fact, this subsequent implementation is where the "practice" of IP truly becomes reality.

Throughout the phases of acquisition discussed previously, technical data and software requirements for sustainment are developed through cooperative processes involving both the acquisition and logistics communities.[82] Many individuals we interviewed emphasized the importance of the logistics organizations having continued opportunities to provide inputs to the acquisition management side starting as early as practicable in the acquisition cycle. Our CITE questionnaire (Appendix B) inquired about the ability of the CITEs to provide those inputs. The responses varied widely, with some saying they had no opportunities, some saying they are able to participate only when asked by the PMOs, and some saying they usually support program offices in determining maintenance approaches including the requirements for IP. In particular, several Army CITEs reported that in the past, they had little opportunity to be involved in setting sustainment approaches or data requirements, but more recently have had much more active roles.

All three military departments have mechanisms for bringing sustainment expertise into the acquisition process. One example is the Office of the Assistant Secretary of the Air Force (Acquisition) (SAF/AQ) position of Deputy Assistant Secretary (Logistics and Product Support) (SAF/AQD). Established in 2014, SAF/AQD is responsible for oversight of product support, supply chain management, materiel maintenance, and support functions

---

81 DODI 5000.02 is not specific as to when the IP annex must be included in the LCSP.

82 In DOD, specifically in the military departments, those in government who develop and acquire weapon systems (acquisition) are separate from those who sustain these systems once they are acquired. However, the requirements for sustaining the systems must be explicitly considered at the front end of the acquisition process with one important element of this being the acquisition of the technical data and rights needed for the subsequent sustainment. There are specific processes for achieving inputs from the logistics support organizations during the development and acquisition process, such as Integrated Process Teams (IPTs).

required throughout the lifecycle of Air Force weapon systems. A key aspect of these responsibilities is to provide logistics inputs into acquisition. AQD is just now starting to review RFPs for major programs to "make sure contracts reflect sustainment needs," including access to the technical data needed for sustainment.[83] SAF/AQD personnel noted that in the Air Force for specific weapon systems the acquisition Program Executive Officer (PEO) "owns both the acquisition and sustainment responsibilities from cradle to grave." This change was put into effect in a 2011 reorganization of Air Force acquisition.

In addition, we were informed of recent efforts to augment available support in IP for program offices. Naval Air Systems Command has recently formed a Product Data Division to assist NAVAIR program offices in the acquisition of IP data and rights. The contracting directorate at Tinker Air Force Base (AFB), Oklahoma, recently created a position for an IP expert to provide support to the Air Force Sustainment Center to combat vendor lock and to better enable competition.

C. Process Issues

The IDA team made a number of visits to and had extensive telephone discussions with various DOD offices in both OSD and the military departments that oversee, implement, or are otherwise concerned with IP and technical data issues. In addition we reviewed the inputs received from the CITE questionnaires on this topic. These interviews and questionnaire responses show the real depth of complexity of these issues and indicate that there are serious IP data and rights problems permeating DOD. This section will discuss the salient issues and provide specific examples from the CITE questionnaire responses, site visits, and discussions.

1. Process Participation

One reality of defense weapon systems procurement and sustainment is that these are separate but interrelated processes, each with their own priorities and demands. We noted previously that within each of the military departments, there is a growing recognition of the need to bring consideration of sustainment early into the acquisition deliberations and provide improved means to achieve this goal. This recognition reflects the concern that lack of attention and focus on sustainment in the past, particularly on the IP data and rights needed for sustainment, resulted in subsequent high dependency on sole-source sustainment contracts that last for decades and are seen as excessively costly.

CITE responses and interviews indicate that the processes outlined in the previous chapter currently are being followed, but there were several indications that this has not always been true.

---

[83] Interview with Director of Logistics and Product Support, SAF/AQD, July 12, 2016.

Examples:

- Three of the six relevant[84] responses from Army CITEs reported very little involvement in reviews of IP provisions in acquisition strategies and LCSPs or IPTs dealing with them. Two others reported that inputs were provided by matrixed staff personnel.
- The responses from Navy CITEs were also mixed and were not always consistent with comments made when facilities were visited.[85]
- One maintenance organization stated, "[we] are not typically involved with acquisitions or contracting of weapon systems; we don't have insight into what tech data is contracted for delivery and what the data rights are."
- In response to a question regarding aspects of the process that need remedy one CITE stated: "Early depot and … Support Team (engineering) involvement in the acquisition of data, particularly for purposes of maintenance planning."

Air Force SAF/AQD raised concerns that program offices at times "do not know what to ask for and how to ask for it" regarding sustainment. As noted previously, SAF/AQD was established in 2014 to develop approaches and mechanisms to help program offices better address sustainment—especially earlier in the acquisition process. However, much of its efforts are still in the preliminary or draft stages.[86]

We also were made aware of efforts by other service sustainment organizations, such as NAVAIR's Product Data Division, to provide support to program offices in the form of experienced people, processes, and tools for determining and specifying logistics-related technical data and software needs. One concern voiced in several interviews was a lack of an accepted "well-defined overall scheme or template" for determining what data are needed under what circumstances.

Another concern is that the personnel resources within the service organizations for determining data requirements in support of weapon system acquisition have been affected by staff downsizing. For example, as a result of downsizing in the late 1990s, a stand-alone engineering support office with 288 positions that provided technical data support (among other services) to NAVAIR was eliminated. The functions were reassigned to engineers in

---

84 One Army CITE reported that its activities did not entail IP-related matters.

85 Some CITEs for all three Services had their responses cleared or consolidated through headquarters, so it is not surprising that there were some discrepancies between the formal submission and what was said in interviews.

86 Interview with Deputy Assistant Secretary of the Air Force, Logistics and Product Support, November 14, 2016.

program offices. As a result, program offices don't have sufficient numbers of trained personnel who have technical knowledge and experience to develop effective data delivery and rights clauses in RFPs and contracts and to challenge contractor's data rights assertions. Data and data rights are frequently a secondary issue for PMOs, and there has been little corporate support above the program for them to turn to. "Without personnel, we can talk tradecraft until we are blue in the face, but it will not make it better." Recently, a new program support office was established to help alleviate these shortfalls, but the new office is sparsely staffed.[87]

2. Difficulties Obtaining IP Data and Rights

Although the planning for technical data and software for sustainment generally may be adequate today, we were told repeatedly that these well-laid plans often are not executed for several reasons:

- Program offices determine that costs to the program and the effort required for obtaining technical data and software cannot be borne within the program's budget, time, and staffing constraints.
- In contract bid and negotiation processes, contractors refuse to agree to provide the data and rights. As detailed below, there are several aspects to the contractors' positions on this, but their main contention is that the data DOD seeks to acquire and have rights to is the property of the company and will only be made available on terms determined by and appropriately beneficial to the company, if at all.
- In sole-source situations, the price demanded by contractors for providing technical data and software frequently is found to be "unaffordable" and paying such costs in acquisition is deemed lower in priority than other more immediate concerns. Even if the long-term savings would justify it, the upfront costs cannot be funded.

3. Failure to Include IP Provisions into Contracts

While the involvement of the sustainment community in specifying IP requirements may be improving, we were told in several interviews that efforts to get the necessary provisions into acquisition contracts often have not survived the contracting and negotiation processes. That is, IP requirements may be specified in the early drafting of RFPs and contracts, often with considerable involvement of the sustainment community, but they do not make it into the final contract. They are either deleted by the program office in the drafting of RFPs or in the formal negotiating process. One way this was put is that the IP

---

[87] Interview with NAVAIR Product Data Division, Patuxent River Naval Air Station, July 20, 2016.

provisions of the RFP or the contract were "traded-off" in favor of system performance or the need to acquire more systems. Contractors sometimes refuse to bid on an RFP that contains IP provisions they find unacceptable. This can happen even when not sole source; if the number of qualified bidders is very limited, all can refuse to bid.

Example:

- F-35 Lightning II (Joint Strike Fighter): NAVAIR sustainment experts worked with this program in the 2005 timeframe to include about 30 delivery contract deliverables for technical data. The NAVAIR sustainment staff has since discovered that most of those deliverable items (e.g., Data Assertion List, Data Accession List, and CDRLs) have disappeared from contracts and that the government now must negotiate with regard to IP rights and data.

Alternatively, the bidding contractor (particularly in sole-source situations) can quote costs for obtaining the data that are seen as exorbitant — essentially making the data unobtainable.

Example:

- A program office's requests for cost quotes to obtain TDPs (which had not been acquired with the initial procurement of the system) were met with exorbitant responses. The sole-source OEM responded with a $1.6 *billion* quote, with two first-tier subcontractors adding $1.25 billion and $1 billion, respectively—almost $4 billion on a program with total acquisition costs of less than $6 billion.[88] (The issue still has not been resolved as of this writing.)

4. Refusal to Provide Technical Data

Even though the government may have rights to data based on the DFARS, in many cases it has been unable to actually exercise those rights. Contractors have simply refused to provide the data, based on assertions that delivery is not required by a contract, and they refuse to agree to such a contract (or demand an exorbitant price). While the government's ultimate recourse is the legal path, that path may not be practical for several reasons—the resources required (funds and staff) are not available, time constraints (solutions must be implemented—cannot wait for a legal process to play out), the legal support is not available, or legal offices will not pursue the case due to priorities or belief that success is not likely.[89]

---

[88] Cited by a U.S. Army aviation program in interview with Program Executive Office—Aviation, Huntsville, AL, on September 13, 2016.

[89] We were informed that suits by the government must be initiated by DOD legal offices and passed to the Department of Justice for pursuit.

Examples:

- A PMO stated a requirement to obtain a TDP for a system modification, but the OEM refused to deliver a TDP that would allow competition for the modification kit. The PMO worked with other sources to build a TDP from available drawings and hardware to allow for production and installation of the kit.
- In an Army Unmanned Aircraft System (UAS) program, the competitively awarded systems development contract contained CDRLs for delivery of a TDP; however, the winning contractor refused to agree to it. Since the system was considered an urgent operational requirement, the CDRLs were deleted. Subsequently, several attempts were made to put technical data delivery in further development and production contracts but again the OEM refused, and only agreed to provide the Army with access to the OEM's online data with limited rights.

5. Data Provided with Disputed Assertion of Rights

Materials submitted by contractors may have data rights markings that DOD considers either erroneous or inappropriate. DOD must go through a process to challenge the rights assertions. Initially, the contracting office notifies the contractor of the disputed rights assertions. If it fails to respond within 60 days, the markings can be modified. If the contractor responds with justification (as is normally the case) and the government finds the justification inadequate, the recourse is to pursue the challenge through legal channels, which can be lengthy and difficult to justify. Meanwhile, the contractor's markings must be honored. For example, a company might assert limited rights for data by claiming exclusions based on the "developed entirely at private expense," while the DOD might contend that it has general-purpose rights based on its assertion that the government partially paid for the development.

There were several instances where the government lacked the time or ability to challenge questionable rights assertions.[90] We were told that many (if not most) contracting officers are unaware of the process for initiating challenges, and lack standardized tools for doing so, which creates a wide disparity in how the government verifies, validates, and challenges its data rights.[91]

---

[90] We were told of several instances in which the program office elected not to pursue a challenge to either markings or claims by the contractor of having developed the technology "solely at private expense" due to limitations in the staff and the problems of data that would make the government's case.

[91] Director, Intellectual Property Initiatives, Tinker AFB, Oklahoma.

Example:

- From a depot: "We find many documents marked proprietary with no DOD markings and typically [must] honor the marking. We've not been informed that "proprietary" has no meaning[92] within the DOD and continue to struggle to find the authority to even ask the question. I believe there is a lack of understanding of data rights and markings between both the commercial and government sector."

6. Obtaining Technical Data and Rights to Establish and Maintain Core Logistics Capabilities

As noted in Chapter 2 in discussing laws related to IP and sustainment, 10 U.S.C. §2464 requires that for designated weapon systems the DOD establish "core logistics capabilities" at facilities that are government owned and operated. To conduct these mandated core logistics capabilities, the depots require access and rights to use appropriate IP data. The data needs and the required resources for establishing the depot capabilities are determined as parts of the Maintenance Task Analysis, to be conducted prior to Milestone C. Different facets of IP data that have been issues include:

- Maintenance manuals with appropriate rights
- Drawing packages
- Parts lists (numbers and suppliers)
- Data for calibration of equipment
- Test data for automated test equipment
- Software and firmware source code and rights

Numerous instances in which military programs were unable to establish core depot sustainment due to the lack of sufficient access to IP data with the required rights were cited in our discussions with military sustainment organizations. In several cases, the unavailability of IP data has led to the establishment of "public-private partnerships" where the OEM subcontracts to a military depot for the sustainment work, but the OEM retains the IP data or restricts rights.[93]

Examples:

---

[92] A "proprietary" marking does not conform to DFARS and, in theory, should always be challenged by the contracting officer. Other exigencies, however, may prevent it.

[93] We recognize the value of such public-private partnerships; however, when they are used as a workaround for past failures to obtain technical data and rights, they do not satisfy §2464 requirements "to ensure a ready and controlled source of technical competence."

- A fighter aircraft engine manufacturer asserted that the engine was developed through its own private investment and thus it would grant the government only limited rights. The engine was determined to be a "core" system, and thus DOD by statute had to provide for organic depot sustainment. Since the service could not obtain the technical data required to set up an independent depot for this sustainment, it had to establish a capability with the engine OEM through public-private partnership arrangements.
- An Army helicopter program sought to conduct a business-case analysis for rotor blade sustainment that required consideration of the cost to maintain this blade organically. The program asked the OEM to quote a price to purchase the necessary technical data; the OEM responded with a $990-million figure, but also indicated that it had no intention of selling such data.
- For the Army UAV program, this system was developed by a contractor that claims it was developed through private funds and thus only limited rights would be allowed. When the Army asked for data to be able to do level of repair analysis, source of repair analysis, and depot repair analysis, it was presented with a $2-billion price tag. Then, when the Army asked for repair procedures for core maintenance, it was told that they were proprietary. The Army argued that it had partially funded the development, so it should have government purpose rights to the data, but the contractor refused despite there being a deferred ordering clause. We were told that "the program is now between a rock and a hard place," in seeking a solution through a phased approach to getting the data that does not stop production.

7. Withdrawal of Previously Allowed Rights

Examples:

- A third-party supplier of a part to the Defense Logistics Agency (DLA) had to stop production and delivery of already-produced parts when the OEM decided to reassert rights previously allowed to produce the item.[94] A new contract that required a two-year lead time had to be negotiated with the OEM, impacting the depot's ability to overhaul engines.
- The OEM for two Army helicopter programs decided, after some 20 years of providing technical data with rights to allow competitive procurement of parts, to no longer provide updates to the data and to assert limited rights on data previously delivered.

---

[94] This case was discussed in a briefing given to the "section 813 panel" by Mr. Matthew Beebe, Director, DLA Acquisition, September 28, 2016.

8. Ability to Compete for Parts Procurement

DOD spends billions of dollars each year on the procurement of spare and repair parts for the thousands of systems being sustained. Even though DOD has a strongly stated policy of encouraging competition, much of this procurement of parts is from sole-source suppliers, even though more than one qualified, or qualifiable, bidder may exist. When such parts contracts could be competed, substantial savings have been realized. The sole-source procurements frequently are the result of the lack of sufficient technical data or rights to permit a third-party supplier to produce qualified replacement parts.

There are several approaches a program office can take to gain access to the IP data and rights needed to competitively source replacement parts. One approach is to provide for or allow royalties to the original part maker for the licensing of data rights to alternative suppliers. Another is to negotiate time limits on exclusivity for a supplier, after which time others would be allowed access to the technical data, as discussed in Chapter 2. And of course, DOD could buy the rights to the data if the OEM would agree to sell at an acceptable price.[95] DOD has encouraged the concept of open systems architecture based on modularity as a means of facilitating use of alternative suppliers without necessitating access to the detailed technical data of specific components. However, this introduces additional issues regarding interface data and the concepts of form, fit and function, and even murkier terms, such as "segregability and reintegration," which become points of contention between DOD and industry.[96]

There are other approaches to getting alternative suppliers for specific parts without using technical data. Other companies may be able to use engineering methods to reverse engineer the part—using only the part itself and data on its performance characteristics. This is reportedly common in commercial aviation sustainment. However, reverse engineering and subsequent testing and qualification can be costly, and to engage in this approach generally requires that the volume of the market for the parts is of sufficient size and value to make the design and testing justifiable economically. Military parts can be highly complex and the markets may not be of sufficient size relative to the fixed costs of reverse engineering and qualification testing for this approach to be viable. One commercial MRO told us that they almost always reverse engineer the parts they make for the commercial aircraft industry, but that these were (1) relatively non-complex and (2) high volume. The firm stated that, except for similar "commercial derivative" parts, it would have little interest in providing parts to DOD.

Examples:

---

[95] That might be the case, for example, if the OEM no longer desires to produce or supply a part.

[96] The 2017 NDAA (not passed at the time of this writing) contains language that attempts to expand and clarify rights to interface data for separable components.

- A PMO is having difficulty obtaining sufficient technical data to compete and procure legacy spare parts. The contractor has taken a position that the majority of their manufacturing and process specifications will not be delivered because they were not required to do so in the initial contract. These specifications are not necessary to accomplish most of the repair and maintenance required but would be necessary to break out future spare parts procurement for a future model of the system.
- A 2013 RAND study assessed potential savings from using FAA-approved parts and maintenance facilities to repair and overhaul engines on DOD CDA. To quote from that report,

> We found the most powerful evidence of potential cost savings on the F103 engine used on the KC-10. The Air Force sustains this weapon system by contractor logistics support (CLS) with non-OEM contractors. For many years, the KC-10 had been sustained by CLS with the OEMs for the airframe and engine. In 2009, after a competition for the CLS contract, the Air Force awarded a new contract to a non-OEM company. That contract, in effect when this research was conducted in late 2013, allows wide latitude to use [FAA-approved parts and repair shops] subject to program approval, and both have been used extensively on engine overhauls. Our analysis of F103 overhaul costs performed on the previous and as-of-February-2015 contracts found a cost savings of over $1 million per overhaul, or over $200 million from FY 2010 to 2013.[97]

The RAND study analyzed several other engines used on military transport aircraft that are very similar to commercial engines, and thus are candidates for similar savings. Our discussions with several third-party MROs and some observers in the DOD sustainment community did not indicate any expansion of DOD's use of FAA-approved parts and repair facilities; in fact, just the opposite. One MRO noted that the Air Force had actually discontinued use of a third-party maintainer for reasons that were not apparent.

9. Training and Availability of Supporting Expertise

We heard several comments from all three military departments to the effect that many PMOs lack personnel sufficiently trained in IP issues and related contractual requirements. Not only is expertise an issue, but the time demands of specifying IP delivery clauses in RFPs and contracts and negotiating rights with contractors stresses the available

---

[97] Mary E. Chenoweth et al., *Applying Best Practices to Military Commercial-Derivative Aircraft Sustainment: Assessment of Using Parts Manufacturer Approval (PMA) Parts and Designated Engineering Representative (DER) Repairs*. RR-1020/1-OSD (Santa Monica, CA: RAND Corporation, 2016), xiii.

staff. While some legal expertise is available to PMOs through the systems or logistics command staffs, those are very limited resources that are in high demand. Several times in our interviews, we were told that personnel in PMOs lacked adequate training in IP matters, or were not aware that help is available outside the PMO. Moreover, the extent and availability of expertise in either the sustainment or acquisition organizations to support the program offices in IP matters is thin. As mentioned earlier, one such service organization stated that its staff had depleted from more than 100 to "a handful."

Several sustainment organizations have made efforts to compile best practices and provide guidance and templates to program offices.[98] While there are extensive guidance documents laying out principles, steps, and procedures for addressing technical data and software needs in the acquisition process, these are still recommended practices. We have found that it is often difficult for a program to implement such practices effectively against the realities of contractors who contest government interests in accessing data within highly stressed program offices. More than guidance and training may be required. Some program staff we talked to indicated that they felt they were on their own, inventing things on the fly without a base of expertise to support them. It may be beneficial to organize expertise more coherently within the military departments and to make these services available to program offices more systematically. (As previously noted, NAVAIR is taking that approach.)

D. Changing Approach to IP for Sustainment: Comparing the P-8, the KC-46, and the UH-60L Modernization Programs

In reviewing how programs have proceeded on accessing IP relative to sustainment, we noted that there has been a considerable swing of the pendulum. The differences in approach and outcome are reflected in three programs, two of which draw on commercially derived aircraft, the P-8 and the KC-46, that are about a decade apart in acquisition. The third program is instituting a large-scale MOSA approach. Below we provide synopses of the acquisitions of these two aircraft as a basis of comparison and then draw some perspective from them.

1. P-8A Poseidon Maritime Patrol Aircraft

The P-8 is a replacement for the Navy's P-3 maritime patrol aircraft. The Navy awarded a contract for engineering development and LRIP to Boeing in 2004. Boeing won

---

98 We were shown some excellent training materials developed by the NAVAIR Product Data Division, and personnel at the Air Force Sustainment Center have developed some materials as well. Another notable example is Air Force Space Command, "Acquiring and Enforcing the Government's Rights to Technical Data and Computer Software Under Department of Defense Contracts: A Practical Handbook for Acquisition Professionals."

over a competing bid from Lockheed Martin, which proposed an upgraded version of the P-3. The Navy plans to buy 109 aircraft, 45 of which had been delivered as of August 2016.

Technical data and software needed for sustainment has been a continuing issue with the P-8 program. Based on discussions the IDA team has had with personnel at Fleet Readiness Center-Southeast (FRC-SE), Jacksonville, Florida, and the NAVAIR Product Data Division at Patuxent River, Maryland, it is apparent that the 2004 contract had few or no provisions for delivery of IP data and rights. Since the initial contract, the Navy is planning for three incremental upgrades to the system to increase its capabilities. Minimal IP data deliverables have been included in contracts to date; however, Navy plans to request more extensive IP data deliveries in future contracts, according to the recently published Acquisition Strategy for the Increment 3 upgrades.

The failure to include IP data deliverables and rights in the initial competitively awarded development contract has been a major impediment to the Navy's ability to provide organic depot maintenance and competition in sustainment for the system. Even basic OMIT and FFF data appear to be limited. The Navy purchased the commercial maintenance manuals, but FRC-SE stated that the manuals were delivered with "proprietary markings on every page." (That is being challenged, with unknown probability of success.)

In addition, FRC-SE personnel stressed that OMIT and FFF data were insufficient for some repairs, such as a "broken wing root, which required design data."

Like the P-3 aircraft that it replaces, we were informed by NAVAIR that the Navy has declared the P-8 aircraft to be a core capability in the sense of 10 U.S.C. §2464. Therefore, the Navy must establish an organic depot maintenance capability for the aircraft in some form. If the Navy is unable to obtain sufficient technical data and software with appropriate rights to provide depot-level maintenance largely in-house, then it will have to use a public-private partnership arrangement. According to FRC-SE, aircraft will be scheduled for depot maintenance beginning in FY 2017, but the depot maintenance arrangements have yet to be made.[99] (In addition, FRC-SE noted that that the aircraft is too large for available Navy hangers).

FRC-SE also informed us that there were IP issues in obtaining competitive maintenance for the aircraft's engine, the CFM-56. Bidders would have to negotiate with Boeing for rights.

In a follow-up e-mail and discussion with the NAVAIR Product Data Division, they stated that:

[99] Discussions held in July 2016.

> P-8 program's strategy is to contract for a Tech Data Package in FY 2018 with delivery in 2020. The TDP delivery will include Boeing Defense System's (BDS) TDP. The Boeing Commercial Aircraft TDP will be on-line access with no delivery.… P-8 is on the path to obtaining required sustainment Tech data [and rights] to become Lead Capability Integrator.

This means that

- The Navy will have only limited/restricted rights to the commercial parts of the aircraft.
- Government-only depot maintenance will be possible only for the military components.
- A Navy depot capability for the entire aircraft likely will have to be a public-private partnership.

2. KC-46 Pegasus Tanker Program

The Air Force is acquiring new aircraft to replace a portion of the aging KC-135 Stratotanker fleet. After a lengthy process, in 2011 the Air Force awarded a competitive contract for the KC-46 as a new tanker based on the Boeing 767 commercial aircraft. Boeing won the competition against a proposal from Airbus. On August 18, 2016, the Air Force awarded a contract for LRIP to Boeing, for 19 aircraft. The Air Force currently plans to buy 179 KC-46 aircraft.

The Air Force was cognizant of the need to be able to establish a core depot capability for the KC-46 as required by 10 U.S.C. §2464.[100] The Air Force provides core depot support for the KC-135, and to not have such capabilities for its replacement was not considered acceptable.[101] Therefore, in drafting the RFP, the Air Force PEO Tankers took advantage of the competitive situation and placed stringent provisions for technical data and software delivery and rights to support organic depot maintenance in the RFP as evaluation factors. During the selection process, the program office pressed the bidders to clarify what data rights would be included, and appropriate CLINs were inserted as priced options in the awarded contract. (To illustrate the complexity of the situation, the contractor's data assertions are a document of several hundred pages.)

---

[100] The information herein is based on a phone interview with the Air Force PEO Tankers on November 22, 2016, and follow-up discussions.

[101] The KC-135 is sustained organically, so the Air Force decided that the replacement system should also be maintained organically. Understanding the requirement for having to do sustainment organically drove the need to "get the data rights at the front end of the solicitation."

The Air Force went into the KC-46 competition with a well-defined IP data and rights strategy and approach based on three key elements:[102]

- The intent from the outset is to employ a wholly *organically managed* sustainment strategy.
- Selected depot-level reparable parts will be repaired organically.
- The Air Force will be the supply chain managers. This requires that the contract provide sufficient data to do that. The Air Force will evaluate whether to stand up organic depot repair capabilities for the commercial items. It may go to industry for certain commercial parts.

The contract requires and funds Boeing to provide technical data and software needed for organic depot maintenance. Boeing proposed the 767 as the platform aircraft, which is an established commercial aircraft. However, Boeing proposed that the KC-46 use the cockpit display from the 787 because of challenges from obsolescence and diminishing manufacturing sources for parts with the legacy 767 displays. Obtaining the technical data for the new displays has been one of the biggest challenges to date on the program, as Boeing asserts commercial technology developed at private expense.

Also there are still "definitional problems"; for example, detailed drawings will not be provided (even though the depot would like them) because the depot will not have rights to manufacture. Another challenge is the parts catalog and the need for parts numbers—there are thousands of parts, and the OEM itself does not have rights to all of them. The Air Force wants to model component failures so that a business-case analysis can be made for which components to repair in the depot. The issue is getting Boeing's agreement to provide data for the models.

Source Selection and IP

The source selection process was the key to obtaining access to the technical data and software needed for the organic depot-level sustainment. The development RFP included CLINs for delivery of data and these were specified as being firm fixed price. In the solicitation, data rights were given equal weight with other mandatory requirements. When the competing proposals were reviewed, the program office challenged some of the data rights assertions that the bidders presented in their proposals. The program office spoke with the bidders to clarify their proposals, including data rights assertions. The bidders had to negotiate on points the Air Force considered unacceptable. This was done as part of source

[102] It was stressed that the program office worked closely with Air Force Specialty Code (AFSC)on all the depot data requirements and that this was crucial to define what technical data were needed early-on so as to get those needs into the RFP and subsequent solicitation process. (IDA was not able to discuss the program with the depot itself.)

selection when the government still had leverage. Competition made such negotiations easier.

The EMD contract with Boeing is based on "Total Evaluated Price." The evaluation went into individual CLINs to assess cost realism. This included the CLINs for technical data. While the cost quoted for the data is proprietary information, it was judged as being "acceptable."

KC-46 aircraft will be delivered with FAA supplemental airworthiness certification, which will allow the Air Force to receive (and provide to third parties) the data required to maintain airworthiness for the aircraft. Airworthiness will be to Air Force standards, but they will start with the FAA data.

The PEO stated, "The key issue is the plan meeting reality" in implementation. He expressed the concern that in order to be clear on what data were needed the program may have been too detailed and too complicated in specifying data rights. He noted that all such program efforts are "learning experiences," and it will not be known until sometime in the future whether this particular effort was successful in achieving the government's objectives.

The PEO responded to our question regarding the adequacy of staff to deal with IP issues. From his perspective, the issue is capacity not capabilities. He does not have enough skilled people to engage the bidders effectively. The KC-46 program was a huge effort to set up and has been "overwhelming" in terms of load on the staff. There is a need to simplify the processes, and to better segment and focus the work. There is thus a need to balance what the government asks for in IP data—the government needs to be more selective in what they need to sustain the system and when they need it.

3. UH-60L Blackhawk Helicopter

The Army Utility Helicopter program manager is responsible for a large fleet of UH-60 Blackhawk utility helicopters. The latest version of this system, the UH-60M, features an integrated data system that is largely a proprietary product of the OEMs, Sikorsky and Rockwell-Collins. This system significantly improves operation and support of the helicopter. The Army has a remaining legacy fleet of about 750 "L" models that do not have an integrated data system and that the Army wishes to modernize. However, the Army wanted to avoid being locked in with a proprietary product for which the rights to technical data for maintenance would be limited. Thus, the Army decided to hold a full and open competition to modernize the L models to include an integrated data suite that would use a MOSA approach with full data rights to permit competitive sustainment. Four potential bidders (including Sikorsky/Rockwell-Collins) filed protests of the terms of this RFP; however, the Army's approach was sustained, and a contract to design and develop the integrated data architecture was awarded to Northrop Grumman Corporation. The Army itself

is serving as the prime system integrator, and much of the work will be performed in Army depots. This is an example of how future "vendor lock" on sustainment can be avoided through creative acquisition and contract management.

4. Lessons Learned from P-8A, KC-46A, and UH-60L Programs

The differences in outcomes for these three programs illustrate recent refocusing of the DOD in the acquisition of IP data and rights for sustainment of major weapon systems. In 2004, when the competition for the P-8 was held, DOD was just emerging, from an era wherein there was an increased emphasis on contractor logistics support and in particular, PBL contracts (for example, the 2001 Quadrennial Defense Review (QDR) called for increased use of PBL).[103] In that earlier era, there was a reduced emphasis on acquiring IP data and rights for sustainment—indeed such data requirements were to be minimized. However, by 2011, there was realization that the then-extant policy was having adverse effects on sustainment cost due to vendor lock arrangements with sole-source sustainment contracts. A sole-source contract without provisions for technical data delivery and rights is difficult to reverse.

The Air Force KC-46 solicitation, the Navy's recent efforts to acquire IP data and rights in the P-8A program, and the Army's approach to UH-60L modernization reflect a change in policies and practices. Discussions with the Army PEO for Aviation and Missiles and his acquisition program management offices provided considerable evidence of this shift. We will reflect on this shift in our conclusions and recommendations.

E. Observations on Findings

The findings presented here demonstrate that there have been substantial issues concerning the acquisition of technical data, software, and rights needed for the sustainment of weapon systems. Note that many of the issues reflect practices over many years that still impact the current sustainment of weapon systems. Our interviews, the survey of the CITEs, and review of documentation show that the military departments today are much more attentive to the need to acquire the IP data and rights for sustainment and are making considerable efforts toward that end.[104] However, even with greater management attention, some practices indicate ongoing challenges regarding DOD effectively acquiring technical

---

[103] Recall the reduced emphasis on IP in DOD regulations, as discussed in Chapter 3. The DODI 5000.2 extant at the time of the P-8A source selection stated *no requirements* regarding the acquisition of IP data and rights. The 2008 revision, however, did include such provisions.

[104] This is exemplified by the recent NAVAIR briefing, showing various "improvements in planning (short and long term); Contracting: TDP and DR assertion reviews." See Naval Air Systems Command, "Gov/Industry Panel on IP," briefing (Patuxent River, MD: NAVAIR Logistics and Industrial Operations, July 12, 2016).

data and software for sustainment while balancing contractor rights to IP. These challenges are discussed further in the next chapter.

This page intentionally blank.

5. Conclusions and Challenges

This project was chartered to review DOD policies, regulations, and practices on IP as they relate to competition in weapon systems sustainment. As many have noted, these policies and practices have varied over time, and more recently, DOD has been increasingly clear that it (1) seeks competition in acquisition and sustainment, but (2) wants to foster innovation in defense capabilities by respecting the IP of the private firms that it engages to provide these capabilities. Also, major defense contractors see sustainment as being increasingly important to their business strategies and over the last several years have been more aggressive in asserting and protecting their data rights and less accommodating in allowing DOD to gain access to them for sustainment of its weapon systems.

Moreover, the arena of IP is complex with many terms and provisions that are ambiguous, or difficult to discern or differentiate in practice, thus opening the door to differing interpretations and disputes. These differences in interests and the differences in how various terms are understood or interpreted affect how the parties (government and industry) negotiate and perform in the acquisition of weapon systems. Adding to the complexity are two additional elements: (1) the congressionally mandated role of DOD depots in the sustainment of weapon systems; and (2) the interests of other firms—mostly commercial MROs and parts providers—in accessing and participating in the sustainment of defense weapon systems. Intellectual property availability is a key factor for both of these, as well.

From the perspective of DOD, there is friction at the seams between the DOD organizations that manage the acquisition of systems and those that manage the sustainment of those systems. In commercial industry, sustainment is a crucial element in the financial success of firms—particularly firms that depend on sophisticated equipment to provide their products or services—such as industrial and energy production and transportation. Sustaining and maintaining of such equipment—including the increasingly important software—is fundamental to their business calculations and thus is integrated into their overall business decisions as much as is the acquisition of the equipment itself. DOD's separate realms of development, acquisition, sustainment, and operations make this type of coherent, integrated decision process much more challenging.[105] The fact that DOD tends to own

[105] The new organization requirement in 2017 NDAA creating a separate Under Secretary for Research and Engineering and an Under Secretary for Acquisition and Sustainment even further separates the functions related to the creation and use of IP.

and operate its weapon systems for decades, and thus must sustain them over these long periods, further differentiates it from most of the commercial world (with some exceptions, such as large-scale energy power generation utilities). Obviously, the fact that DOD must be prepared to operate its weapon systems in hostile and often extreme performance environments differs from how equipment is used in most commercial realms.

These factors combine to make the sustainment of defense systems a complex endeavor, requiring interactions across many organizations within the military departments and defense agencies, such as DLA, and between them and industry. However, sustainment competes with the imperatives of acquisition, especially in times of tightly constrained budgets, and requires investments to be made now for benefits to accrue many years in the future. Buying weapon system capabilities is a tangible process with well-defined deliveries of specific products within determinable time schedules and cost parameters. Sustainment is more elusive and mutable—executed over the lifecycle of the system, and subject to variation in complex factors, such as operation and training rates ("OPTEMPO") that affect the cost of sustainment. Therefore, sustainment investments often are delayed. These factors are reflected in the practices we have reviewed in this project.

Industry, in order to protect future profits, is more intent on maintaining sole-source positions into sustainment. This has led to some prominent cases, cited in Chapter 3, in which companies have simply refused to negotiate delivery of IP data with the necessary rights at any acceptable price.

However, decreases in budgets with even greater focus on decreasing defense personnel would further inhibit the development of the expertise and staff capabilities needed within the military departments to do the planning, solicitation, contracting, negotiating, and enforcement of these contracts so that DOD's sustainment needs are effectively and affordably addressed.

Given these overall observations, we offer the following conclusions regarding DOD's practices regarding IP and sustainment.

A. Conclusions

Current DOD policy, as reflected in DOD issuances and guidance (especially DODI 5000.02, issued as an interim document in November 2013) is robust in its coverage of the importance of IP data and rights to the sustainment of weapon systems.

- However, earlier issuances were less robust. The 2008 issuance of DODI 5000.02 contained several key provisions regarding IP data and rights; however, the 2003 and prior versions contained little if anything on the topic.
- Thus, acquisition programs initiated prior to 2008 were not required by regulation to address IP data and rights issues, and this is reflected in programs such as F-35, P-8, C-17 and F-22 that were started prior to 2008.

Thus, while DOD overall has become more attentive to IP for sustaining its weapon systems, the results of these changes are not likely to be fully realized for years to come. There are reasons to be optimistic that weapon system sustainment in the future will be better planned and provided for in the acquisition process.

Acquisition decision makers in OSD and in the military departments have in the past failed to focus sufficient attention on identifying and accessing the IP needed for weapon systems sustainment. There is recent evidence of improvement, but it is too early to assess whether those efforts are sufficient.

- The focus and structure of the military departments for identifying and accessing the IP needed for weapon systems sustainment has not been commensurate with its importance.
- Practices are dispersed across many activities and organizations across acquisition and sustainment.
- Supporting capabilities in service acquisition organizations to support PEOs and PMOs in addressing IP issues related to sustainment have atrophied.
- Organizational and operational factors have impeded DOD acquiring or accessing IP data and rights needed for competitive sustainment.
  - Program offices often are ill prepared and under-resourced to take on IP issues.
  - Pressures of time and budget in practice have pushed sustainability “down the road” in procurement, locking in the OEM as a sole-source supplier and giving it strong leverage.

Lack of access to IP data with appropriate rights inhibits DOD's ability to use competitive contracting for repair parts, maintenance, and follow-on production, and likely translates into higher longer-term sustainment costs.

This research has found that a lack of access to IP (technical data and software) and associated rights for its use is widespread in existing DOD acquisition programs. Delivery requirements for IP data and associated rights were not asserted in the original development and/or production contracts. The consequences have prevented or restricted competition in sustainment, which in turn has led to sole-source contracts and likely higher sustainment costs.

Because of the bilateral-monopoly environment in which DOD acquires equipment, program offices often are in a weak position in negotiating for IP data and rights. While the *rights* to technical data and software guaranteed by federal statute are generally sufficient for cost-effective sustainment of weapon systems, the main issue lies in the requirement to *deliver* such data. With no or very little competition, companies can simply refuse to agree to contracts that contain IP data delivery requirements. In these cases, maintenance organizations must attempt to manage as best they can when program management offices, for whatever reason, fail to get technical data needed for sustainment. Chapter 4 provides examples of this problem, and shows evidence that it is a key driver of the IP issue, and perhaps *the* key driver.

Acquisition program management has not given IP for sustainment adequate or appropriate attention.

From interviews with acquisition program management personnel, officials in the service acquisition organizations and others who interact closely with the program management organizations, we conclude that PMOs, while generally understanding the importance of obtaining IP rights and data, are hampered by several factors.

- PMOs often have not seen acquiring IP data and rights as a priority relative to performance, schedule, and procurement costs. In addition, and partly because it is a lower priority, PMOs have allocated less time and effort to this function—including getting the necessary people, expertise, and training.
- There is evidence that a widespread lack of expertise in IP matters in DOD acquisition program offices and supporting organizations and the shortages of personnel well trained in IP have resulted in many programs writing contracts that did not require delivery of technical data and software code necessary for competitive sustainment of systems. The result is a dependency on public-private partnerships for depot maintenance and PBL arrangements that may not always be beneficial to DOD.

- There are budgetary reasons for program offices not addressing IP data needs upfront. Acquiring IP data for sustainment has been treated as something that can be traded off relative to near-term funding demands for less certain future sustainment needs that will be paid for by the operational forces, not the PMO.
- In many cases, DOD has accepted OEM assertions of limited rights in data (or restricted rights in software) without challenge. This effectively kills any chance for competition in sustainment for systems, components, or parts affected.

Recently, there has have efforts to provide the program offices with better capabilities to address sustainment more effectively. However, we also learned of problems, both in program offices and in sustainment-support organizations, with maintaining or increasing staffing levels and obtaining the skilled personnel needed. Indeed, we frequently found that key staff members we interviewed were themselves soon retiring or that their staff had been sharply decreased.

Core sustainment needs may not be met because of a lack of necessary technical data; the use of OEM-based public-private partnerships do not ameliorate that deficiency.

In Chapter 2, we reviewed the laws that govern DOD depots with regard to maintaining capabilities to support critical weapon systems in wartime. We have found that the intent of those laws may not be met with current practices. As indicated in Chapter 4, in many cases depots do not have the technical data and software with associated rights to maintain weapon systems independent of the OEMs. For several programs we reviewed, DOD has attempted to get around that issue by forming public-private partnerships with the OEM. The usual arrangement is for the depot to be under sub-contract to the OEM, with the OEM providing the data, engineering expertise, and possibly special equipment, while the depot provides a skilled workforce and the installation and facilities for the work. These arrangements are used to provide a nominal core sustaining capability when the depot would be unable to do so without help from the OEM, since the technical data were not obtained. While the arrangement has several advantages such as helping to maintain a skilled government workforce, it would not appear to meet the intent of §2464 if the depot was not assured access and rights to technical data were the OEM to withdraw from the partnership.[106] Under a national emergency, such a situation could put the OEM in a position to make unreasonable demands in contract renewal.

---

[106] 10 U.S.C. §2464 requires that DOD "maintain a core logistics capability that is Government-owned and Government-operated (including Government personnel and Government-owned and Government-operated equipment and facilities) to ensure a ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization …" See Appendix E for additional information.

Ambiguous terms and loosely defined constructs impair implementation of IP for sustainment.

Several terms that occur in 10 U.S.C. §2320 and their treatment in the DFARS cause confusion regarding their meaning. These include the following:

- Operation, maintenance, installation, and training (OMIT) data;
- The "except for detailed manufacturing and process data" exclusion in the OMIT provisions;
- Developed at private, public or mixed expense;
- Form, fit, and function (FFF) data;
- Interfaces among components—segregation and reintegration (relates to use of MOSA); and
- Depot maintenance (See Appendix E, Paragraph A.1.a).

Many of the issues identified in our review of practices relate to these differences in interpretation and ambiguities. To illustrate with an example, an issue regarding the definition of depot maintenance is whether the term includes the ability to fabricate a part required to make a repair. Does that constitute "manufacturing" subject to the exclusion of "except for detailed manufacturing and process data" from OMIT data? The 2012 NDAA added the phrase "includes … the fabrication of parts, testing, and reclamation, as necessary" to the definition of depot maintenance; however, the FY 2013 NDAA reverted to the previous text that stands today.

The FY 2017 NDAA conference report attempts clarification of several of these topics, including OMIT, rights for items developed at private or mixed expense, and rights governing the interfaces among major components. Whether those "clarifications" will be helpful remains to be seen.

On August 15, 2016, the Aerospace Industries Association (AIA) submitted to the NDAA §813 Government-Industry Advisory Panel a detailed list of issues and concerns regarding IP data rights, in particular, enumerating many terms and constructs, with varying implementation, that are seen as being ambiguous or subject to interpretations unfavorable to industry. The 55-page discussion details practices and interpretations regarding both laws and their implementation in DFARS. The §813 panel is chartered to review laws regarding rights in technical data and the validation of proprietary data restrictions and the implementing of regulations. Industry perspectives on these issues are as important as those of the DOD. Given available time—and our charter to focus on DOD practices—we did not conduct a full assessment of industry or government claims regarding these issues. We emphasize that the ambiguities and differing interpretations have created ample disagreement which have resulted in behaviors by both government

and industry that have exacerbated tensions and discord detrimental to achieving effective sustainment of defense weapon systems. In this regard, the §813 Panel is a laudatory first step. However, we believe that more on-going interactive engagement between the DOD and industry is needed.

Use of FAA maintenance data for DOD CDA could be expanded and result in substantially lower sustainment costs for such aircraft.

FAA regulations mandate third-party access to maintenance data on aircraft they certify. Applicability to DOD's CDA has been contentious. We have been made aware of concerns from third-party MROs that they were unable to compete on providing sustainment support to CDA programs for which they claim to have requisite capabilities. These MROs contend that because these aircraft are commercial derivative, FAA rules on making maintenance data available could be exploited by DOD to obtain data that would allow them to compete on sustaining these aircraft. Some DOD programs have disagreed with these MRO assertions, stating that data provided under FAA rules cannot be used for their military-use CDA because flight profiles differ. Third-party MROs see prospects of substantial business in servicing commercial derivative DOD aircraft, but feel that DOD discourages their competition by not using the data available via the FAA provisions. Some claim that DOD could save "tens of billions" annually if it followed commercial practices on systems derived from commercial aircraft. We find that significant savings are plausible; however, we have not made an estimate of such savings.[107]

IDA is not in a position to make any judgment on the merits of specific MRO or program offices' contentions or disagreements. We have determined, however, that there are many military programs using CDA that have accepted an FAA Air-Worthiness Certificate and obtained the requisite technical data for maintenance based on this.[108] Determining how and why these instances differ from those in which an MRO deemed that it was inappropriately excluded from competition was not investigated in this project. Nonetheless, it appears likely that DOD could obtain greater access to technical data for sustainment for certain aircraft, components, and parts through the use of data provided under FAA rules.

While this approach would apply only to CDA, DOD has a substantial number of such aircraft. Through the use of these technical data in a competitive approach, DOD

---

[107] Based largely on Chenoweth et al., *Applying Best Practices to Military Commercial-Derivative Aircraft Sustainment: Assessment of Using Parts Manufacturer Approval (PMA) Parts and Designated Engineering Representative (DER) Repairs*. It is estimated that about $50 million per year was saved using commercial parts for the KC-10 aircraft engines, which comprise less than 10 percent of Air Force cargo and tanker fleets.

[108] Examples include C-40, C-12, and UH-72, among others.

could access a large infrastructure for maintenance and supply for the commercial aviation fleets. Although DOD faces some limitations in adopting commercial practices, and some defense CDA are operated such that non-defense sustainment may not be appropriate, it appears that DOD can more aggressively pursue this practice, as evidenced by the current example of the KC-46 aircraft. Making greater use of this approach would (1) increase the prospects for substantial reduction in sustainment costs, (2) further the facilitation of organic depot maintenance, rather than OEM-sole source maintenance, and (3) increase the use of parts provided by alternative suppliers and component repair by FAA-certified facilities.

"Buy-in" bids for development and production contracts are a basis for OEMs locking in sole-source sustainment "franchises."

There is evidence that OEMs submit unprofitable bids on initial development or procurement contracts under the assumption that they can lock in a long-term future acquisition and sustainment position. That strategy might entail an assumption that they can withhold technical data and software or limit the government's rights to them when provided. Of course, a bidder's calculus in arriving at such a strategy is not known outside the company. That strategy was suggested in the KC-46 tanker contract cited in Chapter 4, wherein Boeing offered a fixed-price development proposal that is going to result in a substantial loss. This loss may be entirely made up in the sole-source production contracts. Whether Boeing also expects to make substantial profits in sustainment is not known, but as described in Chapter 4, the development contract contains significant provisions for the delivery of technical data and software to the government, with rights that will permit robust organic depot maintenance and at least some degree of competition in sustainment.

If more rigorous approaches to requiring delivery of IP data and rights in competitive contracts are pursued widely in DOD acquisition, industry will adjust its bid calculus. Firms will make judgments on pricing bids, realizing that future sole-source sustainment is less likely. Theoretically, higher bids will result, thus addressing access to IP early in the acquisition process and making it a priority so as to reduce the downstream sustainment burden on DOD. This would have the effect of countering the "buy-in" mentality that currently affects many DOD acquisition programs and reducing the prospect of "vendor lock" in long-term sustainment, outcomes that would be beneficial to the climate for defense acquisition.

The strategy can and recently has worked when these issues are addressed early in the acquisition process when there is actual competition. This argument supports a conclusion that DOD should insist on obtaining the sustainment IP it requires and pay the upfront costs implied. DOD's calculus is complex, requiring judgments about uncertain future needs and associated costs. Factors crucial to making this work are (1) that there is real competition amongst alternative suppliers, and (2) that DOD provides the higher-level leadership and

support to program offices in an effort to determine what IP data and rights it should insist on, conduct the required negotiations, and pay the additional costs to address long-term needs, not just initial procurement. In this regard, it is imperative that DOD seek to maintain a competitive environment for the acquisition of defense weapon systems to the extent possible. As experience has shown, without competition, DOD has little leverage in reducing sustainment costs.

B. Broader Challenges

A renewed focus on reducing sustainment costs at high levels in DOD may provide the support and increased incentives for acquisition programs to effectively address IP early in program development and make the necessary investments to acquire the rights and delivery of the data. But, this leaves broader challenges:

- There is a vast legacy of defense systems, amounting to billions of dollars in sustainment costs, for which the necessary IP data and rights for organic depot or competitive sustainment were not acquired.
- Future defense systems for which there is little, if any, competition will give DOD little leverage to negotiate acquisition of IP early in the program.
- While fostering innovation, systems developed by a defense vendor exclusively at their own expense, as was the case for several unmanned air systems, often provide very limited data rights to DOD, hindering sustainment by anyone other than the OEM.
- Purely commercial technologies, including a vast array of software products that DOD is increasingly using, provide only the same access to IP as commercial customers have, unless DOD can negotiate more extensive rights. This challenges DOD sustainment concepts.

This project points to these challenges as topics that DOD, interacting with Congress and in consultation with its suppliers, needs to address.

It is apparent that there is considerable room for improvement in the practices of IP for sustainment. There do appear to be some basic factors to consider before making changes in law, regulation, or DOD's implementation practices. There is evidence that DOD can formulate reasonable and effective plans for identifying and obtaining access to the IP data it needs for sustaining weapon systems. There is also evidence that it can implement such plans as well. However, to do either requires that the organizations responsible—both in acquisition and sustainment—be given adequate backing and support. This includes supporting future efforts to identify ways to define DOD interests and approaches to achieving its needs to sustain weapon systems given the challenges enumerated previously.

In addressing these challenges it is clear that the parties involved—government and industry, as discussed earlier in this report—in pursuit of their particular interests see the problem through a different lens and argue from that perspective. Given these competing interests, it is our view that sweeping changes in law or regulation do not appear to be needed, but there is certainly room for greater clarity, which can be achieved through modifications in regulations and perhaps in the law. While others have noted that these laws and regulations are already complex, there is a danger in simplifying laws and regulations if that would lead to arbitrary or unintended outcomes that are deleterious to the interests of either DOD or industry. It also seems that attempting to use legislation or even regulation to eradicate all ambiguity in use or practice is fraught—as exemplified by the multiple iterations of revisions to §2320, which do not seem to have resolved long-standing issues. Ongoing processes are needed for modifying regulations and practices at the margin, while identifying major areas of concern that may require substantial changes in policies or law.

The main concern looking to the future is the relationship between DOD and its contractors, given the diminished competitive environment. It may be appropriate to ask whether the point has been reached at which the underlying assumptions of achieving proper results through competitively bid contracts is of decreasing validity. Has DOD's acquisition of major weapon systems become so constrained that achieving equitable outcomes through a bidding process is largely a myth? DOD is charged with "fair and open competition," but a market comprising at best two major competing vendors argues against this. When competition devolves into sole-source contracts, the notion of fair and equitable becomes moot. This presents DOD with a much more profound and difficult problem requiring fundamental new thinking about how it contracts for major systems and their sustainment.

6. Recommendations

This project has reviewed DOD practices related to the procurement, management, and use of IP rights to facilitate competition in sustainment of weapon systems throughout their lifecycles. This review has put forward issues and challenges for which the IDA project team recommends the following actions for DOD:[109]

- **Recommendation 1: Make sustainment and acquisition of related IP data and rights an explicitly stated high-priority in DOD management and oversight of acquisition programs.**

All other recommendations would require active engagement in addressing IP data and rights issues by acquisition executives in both the services and OSD.

- **Recommendation 2: Establish or expand existing organizational capabilities within the DOD components (with OSD support) to provide expertise in the acquisition of IP data and rights to program managers throughout their programs' lifecycles and to other staff involved in weapon systems acquisition.**
- **Recommendation 3: Require DOD acquisition programs that are largely dependent on sole-source contracts to OEMs for sustainment to conduct a Business Case Analysis of options to transition to a competitive model for sustainment (maintenance and supply). The results should be forwarded to the component acquisition executive with a recommended plan to obtain the needed IP data and rights.**
- **Recommendation 4: State as a matter of policy that DOD acquisition programs that use CDA should maximize use of data provided for FAA-certified aircraft under FAA regulations to facilitate competition for maintenance and supply of parts for systems and components.**
- **Recommendation 5: Establish under OSD auspices an ongoing DOD advisory group to identify and, in consultation with industry, seek resolution of ambiguities and disagreements in terms and provisions related to**

[109] This study makes no recommendations regarding legislation, since that was explicitly the charter of the NDAA 2016 Section 813 Government-Industry Advisory Panel. In addition, the 2017 NDAA has several provisions addressing intellectual property and the sustainment of defense systems.

DOD sustainment needs, particularly those involving access to and use of IP. The group should be tasked to develop an appendix to the DFARS that would specify in greater detail the meaning of such terms as "operation, maintenance, installation and training" data; "form, fit and function" data; and "detailed manufacturing and process data."[110]

- **Recommendation 6: DOD should support and fund an assessment of DOD acquisition and sustainment specifically focused on alternative approaches for contracting and overseeing the development, procurement, and sustainment of weapon systems under severely limited competition.**

In particular, this assessment should investigate alternative public policy models for acquisition that realistically provide for the achievement of government-defined policy outcomes by relying on private-industry suppliers when there are few suppliers in any specific sector. Such approaches would need to accommodate DOD's need to meet the requirements of 10 U.S.C. §2464 for core depot sustainment and to provide for promotion of the development and implementation of the innovations needed to sustain DOD's leadership in defense capabilities.

[110] A model for such an appendix is the appendices to FAA regulations regarding Instructions for Continued Airworthiness Data (14 Code of Federal Regulations, Part 33).

Appendix A.
Example Institute for Defense Analyses (IDA) Letter to Centers of Industrial and Technical Excellence (CITEs)

IDA | David S. C. Chu
President

May 31, 2016

Colonel Martine S. Kidd, USA
Anniston Army Depot
7 Frankford Avenue Anniston
Anniston, AL 36201-4199

Dear Colonel Kidd,

In accordance with Section 875 (a) of the National Defense Authorization Act for Fiscal Year 2016, the Director, Defense Procurement and Acquisition Policy, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, commissioned IDA to conduct a review of:

(A) Department of Defense regulations and practices related to Government access to and use of intellectual property rights of private sector firms; and
(B) Department of Defense practices related to the procurement, management, and use of intellectual property rights to facilitate competition in sustainment of weapon systems throughout their life-cycles.

The legislation mandating the review asks that each designated Center of Industrial and Technical Excellence (CITE) be consulted. The purpose of this letter is to initiate that consultation with your command.

Would you identify a point-of-contact from your organization with whom we might work to obtain your organization's views concerning these regulations and practices? Please provide the name, phone number, and e-mail address of your designated point-of-contact to Dr. Royce Kneece, 703-933-6566, rkneece@ida.org.

Your expeditious response would be greatly appreciated so that we provide a timely response to the Department of Defense. If you have no inputs for the review, a negative response would be appreciated.

Sincerely,

David S.C. Chu

This page intentionally blank.

Appendix B.
Center of Industrial and Technical Excellence (CITE) Questionnaire

For Institute for Defense Analyses (IDA) to support tasked response to Section 875, FY 2016 National Defense Authorization Act (NDAA)

When (at what milestone or other event) during the acquisition process and in what way does your organization become involved with the program office in determining and implementing the maintenance and repair approach for a system?

- Participate in program Integrated Product Teams (IPTs)?
- Contribute to and/or review of Life Cycle Sustainment Plans (LCSPs) and its component Intellectual Property Strategy (IPS)?
- Contribute to and/or review Core Logistics Assessments/Core Depot Assessments?
- Review of draft Requests for Proposals and contracts?

What level and types of data are needed to perform maintenance and repair? By when is the data needed?

To what extent is a lack of tech data an obstacle to performing your maintenance and repair activities?

- Please provide some idea of the frequency—often, occasionally, seldom, or never.
- Some examples, both good and bad, would be very helpful.

This page intentionally blank.

Appendix C.
Department of Defense (DOD) Use of Federal Aviation Administration (FAA) Airworthiness Data for Commercial Derivative Aircraft (CDA) and Components

This appendix is a summary overview of a complex matter; a full review and analysis is beyond the scope of this project.

The FAA controls the design, production, and maintenance of civil aircraft that operate in the U.S. civil airspace. The design regulations are issued to ensure that civil aircraft, engines, propellers, and their modification or replacement parts meet "airworthiness standards." Aircraft, engines and other parts receive a "type certificate" when the design meets the FAA's airworthiness standards. Each aircraft is then delivered to a customer with a "standard airworthiness certificate."

The applicable regulations are codified in the Code of Federal Regulations (CFR), Title 14 (aeronautics and space). DOD aircraft are operated as "public use aircraft owned by the armed services" and generally do not possess FAA standard certificates of airworthiness. Military design, production, maintenance, and operations of DOD aircraft are excluded by law from FAA oversight[1] and thus are not required to receive approval from that agency. Instead, military aircraft (and their engines and propellers and replacement and modification parts) must meet standards set by the "Military Airworthiness Authorities" (MAA) developed by each military department.

Under the 14 CFR, the "Design Approval Holder" (DAH) (e.g., the manufacturer of the aircraft or replacement and modification parts) is required to provide "Instructions for Continued Airworthiness" (ICA) to all owners of aircraft with FAA standard airworthiness certificates, and in turn, the owners may provide that data to any party "required to maintain" the aircraft (i.e., a third-party maintainer). The ICA data is basically operations,

[1] "Aircraft operated by the military are by statute public-use aircraft and are not subject to the civil regulatory requirements for certification, maintenance, and operation." See Federal Aviation Administration, "Guidance for Certification of Military and Special Mission Modifications and Equipment for Commercial Derivative Aircraft (CDA)," Advisory Circular AC No: 20-169 (Washington, DC: U.S. Department of Transportation, September 30, 2010), 6.

maintenance, installation, and training (OMIT) type data; however, unlike the DFARS, FAA regulations describe in considerable detail the data that must be provided. The aircraft manufacturers must provide updates to the data as required. These data are used by FAA-approved repair stations for maintenance, repair, and overhaul of civil aircraft.

The military services have a number of "commercial derivative aircraft"[2] that are based on FAA-type-certified designs, but some modifications have been made to meet DOD specifications. The modified aircraft would no longer carry FAA-type certification, and therefore the manufacturer would not be required to provide ICA data to DOD. However, depending on the extent of the modifications, DOD can take steps to obtain a "supplemental-type certificate" for the aircraft, and any such aircraft that also receives a standard airworthiness certificate would qualify for the ICA data. A letter (a copy of which was obtained from the recipient) from an FAA attorney[3] clarifies the point that OEMs would be required to provide ICA data for any DOD-owned aircraft for which a standard airworthiness certificate has been issued.

DOD can obtain FAA certification for its CDA by specifying in contracts that delivered aircraft must have FAA standard airworthiness certificates. If the aircraft are already delivered without the certification, DOD *might* be able to obtain standard airworthiness certificates for them.[4] The previously cited FAA letter clarifies that DOD could go through a process to obtain the certification, and in that case, the requirement on the OEM to provide ICA data to DOD would apply. (IDA has not delved further into how feasible that course of action might be for DOD.)

All three military departments informed the IDA team that they take advantage of this approach for some of their aircraft fleets. We do not have details as to which aircraft are included, nor the extent to which the data are used. Certain third-party MROs that IDA has met with hold that DOD could greatly expand the availability of ICA data for CDAs (including their engines and propellers), thus providing an avenue to significantly greater competition in sustainment. Those claims seem to rest on whether use could be expanded to a larger fraction of the fleets. That question requires more detailed study, which is beyond our scope.

---

2 See Federal Aviation Administration, "Guidance for Certification of Military and Special Mission Modifications and Equipment for Commercial Derivative Aircraft (CDA)," for a discussion of CDAs.

3 Letter to Sammy D. Oakley, Piedmont Propulsion Systems, Inc., from U.S. Department of Transportation, Federal Aviation Administration, Office of Chief Counsel, January 2, 2015, signed by Mark W. Bury, Assistant Chief Council for International Law, Legislation and Regulations.

4 See Federal Aviation Administration, "Guidance for Certification of Military and Special Mission Modifications and Equipment for Commercial Derivative Aircraft (CDA)," 6.

A related issue concerns parts approved for use in FAA-certified aircraft. The FAA has a review and approval process to ensure the airworthiness of parts manufactured by third-party suppliers, known as "Parts Manufacturer Approval" or PMA. DOD has its own processes for approval of parts for use in DOD systems; however, according to a RAND report,[5] the Air Force has, at least in the past, authorized some use of FAA PMA parts in maintenance of aircraft engines. It appears that the Navy does so as well, at least for its C-40 aircraft, which are derived from the Boeing 737, with a reported 98 percent commonality.[6] The RAND study suggests that an expansion in the use of PMA parts could result in substantial savings by increasing the number of vendors that could compete for the supply of parts.

---

5 Mary E. Chenoweth et al., *Applying Best Practices to Military Commercial-Derivative Aircraft Sustainment: Assessment of Using Parts Manufacturer Approval (PMA) Parts and Designated Engineering Representative (DER) Repairs*, RR-1020/1-OSD (Santa Monica, CA: RAND Corporation, 2016).

6 See Christine Blinn et al., "Navy Tailors Best Commercial Practices for Military Use: The C-40A Clipper Aircraft," *Defense AT&L* (March–April 2009): 22–25.

This page intentionally blank.

Appendix D.
History of Department of Defense (DOD) Intellectual Property/Technical Data (IP/TD) Issues

DOD IP/TD issues have varied over time due to changes in defense strategy and priorities as a result of changes in perceived threats, the evolution of militarily-significant technologies, the competitive structure of defense industry suppliers, and new DOD sustainment management laws, approaches, and capabilities.

Early Cold War (1950s and 1960s)

In the face of the military threat from the Soviet Union after World War II, the United States continued to support the prodigious wartime defense industrial base with massive investments in science and technology (S&T) and military hardware: nuclear weapons and delivery systems; air and missile defense; new platforms for sea and air employing new propulsion technologies; and electronics for surveillance, reconnaissance, and command and control. The list of companies supporting the U.S. military expanded beyond those (such as General Motors, General Electric, Westinghouse, AT&T, and IBM) that had directly supported the war effort. Academic-industrial partnerships flourished, particularly near Stanford University and the Massachusetts Institute of Technology (MIT). By 1960, DOD was funding 70 percent of electronics research and development in the country, helping launch today's Silicon Valley.[1]

Recognizing the management challenge, DOD instituted new acquisition management organizations, such as the Director of Defense Research and Engineering (DDR&E) and the Advanced Research Projects Agency (ARPA), to bring greater coherence to disparate (and often competitive) development efforts of the military services. DOD also looked to the outside for technical support, creating independent, non-profit Federally Funded Research and Development Centers (FFRDCs). The Air Force engaged TRW[2] to help manage its complex systems development, but due to concerns about competitive

---

1 Richard Van Atta et al., *Science and Technology in Development Environments: Findings and Observations for the Missile Defense Agency from Commercial Industry and Defense Programs*, IDA Paper P-3764 (Alexandria, VA: Institute for Defense Analyses, May 2003).

2 TRW stood for Thompson Ramo Wooldridge, reflecting the merging of Thompson Products Company and Simon Ramo and Dean Woolridge, formerly from Hughes.

advantages that TRW would glean from on its advisory role, a new FFRDC, The Aerospace Corporation, was formed in 1960. Nevertheless, in his "Farewell Address to the Nation" on January 17, 1961, President Eisenhower warned that the "conjunction of an immense military establishment and a large arms industry is new in the American experience" and that "the councils of government … must guard against the acquisition of unwarranted influence … by the military-industrial complex."

While the heavy DOD investment in S&T and systems attracted companies into the market that invested their own development funds, most of the technology employed in weapons systems came out of DOD-sponsored S&T,[3] and DOD owned the IP/TD required to perform maintenance. The majority of maintenance work was performed by depots and shipyards around the world to support the U.S. global military footprint and operational plans. In 1968, naval shipyards turned over shipbuilding to the private sector in order to focus on fleet maintenance.[4] With new systems being developed constantly in order to stay ahead of the Soviet Union technically, long-term sustainment was not a pressing issue. Also, in response to the 1969 Commission on Government Procurement, the Federal Acquisition Regulations (FARs) were promulgated in 1974, followed by the Defense Federal Acquisition Regulation Supplement (DFARS) that, among other things, specified broad DOD rights in IP/TD.

The Revolution in Military Affairs (RMA) (1970s and 1980s)

The Vietnam War exposed weaknesses in U.S. military capabilities. In particular, Soviet-designed integrated anti-aircraft systems were very effective against U.S.-built jets in Vietnam (and in the 1973 Yom Kippur War). Concurrently, Warsaw Pact offensive forces in Europe had been significantly improved, and the Soviet Union had achieved rough parity with the United States in nuclear weaponry.

In response, DOD invested heavily in advanced electronics and information technologies. These technologies and concomitant changes in doctrine led to a revamping of U.S. military posture. Better battlefield information, the ability to suppress defenses, and the capability to strike precisely at high-value targets represented a new way of achieving and maintaining military control in which large platforms would play a less important role.[5]

---

[3] Department of Defense, *Project HINDSIGHT*, Final Report (Washington, DC: Office of the Director of Defense Research and Engineering, October 1969), AD0495905.

[4] General Accounting Office, *Defense Depot Maintenance: Uncertainties and Challenges DOD Faces in Restructuring Its Depot Maintenance Program*, GAO/T-NSIAD-97-112 (Washington, DC: GAO, May 1, 1997).

[5] Richard Van Atta et al., *Transformation and Transition: DARPA's Role in Fostering an Emerging Revolution in Military Affairs*, vol. 1, *Overall Assessment*, IDA Paper P-3698 (Alexandria, VA: Institute for Defense Analyses, April 2003).

This period also began the migration of value in defense systems from hardware to software and from military-unique to "dual use" technologies.

As in the early Cold War, the shift in military weaponry led to highly complex technology development and systems integration challenges that were often beyond the ability of DOD to manage internally. However, unlike that period, DOD budget pressures led to reductions in depot and shipyard investment, primarily through consolidation. Defense prime contractors—of which there were also fewer due to consolidation—assumed greater responsibility for weapons sustainment and associated IP/TD management. The service life of tanks, ships, and aircraft could be extended through electronics and missile upgrades, putting pressure on depots and shipyards to sustain systems for much longer periods than in the past. The B-52 Bomber, for instance, which entered service in 1955 and was produced through 1963, was used extensively in Vietnam and remains in service to this day, with Tinker Air Force Base (AFB) performing maintenance.

Peace Dividend and Acquisition Reform (1990s)

The fall of the Soviet Union led to a reassessment of defense needs and accelerated a decline in U.S. defense spending that had begun in 1987. Overall, world military spending fell by more than 30 percent in real terms from 1989 to 2004.[6] The ascendance of William J. Perry to Deputy Secretary of Defense in 1993 and then Secretary in 1994 led to the implementation of significant defense acquisition reforms aimed at bringing more commercial technology and practices into the DOD. Guidance on the use of modular open systems architectures, for instance, was intended to foster competition and allow commercial companies to be DOD suppliers. In the face of anticipated reduced business, Perry encouraged and oversaw a consolidation of the U.S. defense industrial base, accelerating the trend begun in the 1980s.

Concurrently, Congress approved several major Base Realignment and Closure (BRAC) lists in 1991, 1993 and 1995, included several depots and shipyards. Outsourcing of maintenance also increased, though it was limited by Congressional rules on the type and percentage of work that must be done by government-owned and operated facilities.[7]

---

6 Ann Markusen, "Should We Welcome a Transnational Defense Industry?" in *The Place of the Defense Industry in National Systems of Innovation*, Occasional Paper #25, ed. Judith Reppy (Ithaca, NY: Cornell University Peace Studies Program, April 2000), 26.

7 U.S.C. Title 10, §2464, enacted in 1984, requires DOD to maintain maintenance capabilities for "core systems." §2466 required 50 percent of all maintenance work (measured in dollars) to be conducted by depots and shipyards. (It was 70/30 when first enacted in 1982 and 60/40 in the early 1990s.) Those depots designated as Centers of Industrial and Technical Excellence (§2474, enacted in 1999) may go beyond 50 percent through public-private partnerships. See U. S. Government Publishing Office. "United States Code, Title 10 – Armed Forces."
https://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE&searchPath=Title+

The defense acquisition workforce was also reduced during this period, driving DOD toward greater contractor control of systems maintenance. At the same time, the FY 2001 National Defense Authorization Act (NDAA) included the Defense Acquisition Workforce Improvement Act (DAWIA), which required DOD to establish education and training standards, requirements, and courses for the civilian and military workforce. Defense Acquisition University was created to standardize and centrally manage training.

As in the 1970s, reduced budgets meant that DOD kept older systems in the inventory versus replacing them, increasing sustainment problems.

Afghanistan, Iraq and Globalization (2000s to Today)

Defense budgets began increasing after the attacks on 11 September 2001, rising sharply with U.S. deployments in Afghanistan (2001) and Iraq (2003). Contractors were brought in various roles, including maintenance and even force protection. Unanticipated wartime needs—particularly for counter-insurgency operations—led DOD to stand up several "rapid acquisition" offices and task forces (e.g., the Joint Improved Explosive Device Defeat Office (JIEDDO), the Joint Rapid Acquisition Cell (JRAC), and the Rapid Response Technology Office (RRTO)). Putting capabilities into warfighter hands was the highest priority, often leading to little attention to sustainment.

Meanwhile, a variety of other sustainment-related activities occurred:

- The 2001 Quadrennial Defense Review (QDR) advocated a move to performance-based logistics, whereby the DOD would purchase performance outcomes—e.g., readiness or hours of flight—rather than contracting for goods and services.
- In 2005, The Defense Acquisition Performance Assessment Panel suggested "fully implement the intent of the Packard Commission," including rebuilding of the acquisition workforce and better long-range planning cooperation with industry.
- The FY 2006 NDAA authorized the use of Lead Systems Integrators: a contractor, or team of contractors, hired by the federal government to execute a large, complex, defense-related acquisition program, particularly those involving "system-of-systems."
- The FY 2006 NDAA also called for a DOD-wide management structure for acquisition of services, leading to the creation of the Office of Defense Procurement and Acquisition Policy (DPAP).

10%2FSubtitle+A%2FPart+IV%2FCHAPTER+137&oldPath=Title+10%2FSubtitle+A%2FPART+IV&isCollapsed=true&selectedYearFrom=2014&ycord=585.

- On April 6, 2009, the Secretary of Defense announced that the DOD would scale back the role of contractors in support services and begin to bring them back in house. Combined with reduced US troop levels in Iraq, DOD spending on services dropped from a high of over $200 billion in FY 2009 to $144 billion in FY 2015.

These measures reflect, in part, the continuing move toward a "services economy" with increasing spending on software. The nature of industrial companies also changed during this period, with large firms increasingly focusing on global markets and thinking of themselves today as global enterprises, shifting market power on balance from governments toward private industry.[8] This challenges DOD's analytical capacity to project what different configurations of industry might mean for weapons innovation, costs, and prices.[9]

---

8 John Lovering, "The Defense Industry as a Paradigmatic Case of Actually Existing Globalization," in *The Place of the Defense Industry in National Systems of Innovation*, Occasional Paper #25, ed. Judith Reppy (Ithaca, NY: Cornell University Peace Studies Program, April 2000), 25.

9 Flamm, Kenneth, "Redesigning the Defense Industrial Base," in *Arming the Future: A Defense Industry for the 21st Century*, ed. Ann R. Markusen and Sean S. Costigan (New York: Council on Foreign Relations Press, 1999), 224–246.

This page intentionally blank.

Appendix E.
Legal Context, Issuances and Guidance of the Department of Defense (DOD) Regarding Intellectual Property (IP) Rights

This appendix documents the results of a review of the legal context and the DOD issuances and guidance related to government access to and use of IP rights, as called for in Section 875 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA). The first section (Statutes) summarizes the sections of U.S. Law that cover the laws pertaining to the DOD and IP data and rights. The next section (Departmental Guidance Regarding IP) addresses the review of DOD regulations. The DOD components also issue regulations pertaining to IP; however, a review of these documents was beyond scope of this project.

Statutes

The United States Code (U.S.C.)

Title 10 of the U.S.C. (Armed Forces) contains the preponderance of laws pertaining to DOD. The first two sections of Title 10 most relevant to IP data and rights are §2320 and §2321. These two sections deal with rights to technical data. The remaining four sections focus on the following:

- The definition of depot-level maintenance and repair (§2460);
- The requirements for certain organic core maintenance and repair capabilities to be maintained by the government through its depots, (§2464); and
- The percentage of depot-level maintenance and repair that can be performed by non-government personnel, and (§2466).

Provisions that enable depots to participate in public-private partnerships, which do not count against restrictions on the percentage of depot-level maintenance and repair that can be performed by non-government personnel (§2474).

10 U.S.C. §2460, Definition of Depot-Level Maintenance and Repair

This section of the U.S.C. defines the term "depot-level maintenance and repair" as follows:

Material maintenance or repair requiring overhaul, upgrading, or rebuilding of parts, assemblies or sub-assemblies, and the testing and reclamation of equipment as necessary, regardless of the source of funds for the maintenance of repair or the location at which the maintenance or repair is performed. This term includes (1) all aspects of software maintenance classified by the Department of Defense as of July 1, 1995, as depot-level maintenance and repair, and (2) interim contractor support or contractor logistics support (or any similar support), to the extent that such support is for the performance of services described in the preceding sentence.[1]

The law further delineates several exceptions to this definition. First, it is stated that the definition does not apply to "procurement of major modifications or upgrades of weapons systems that are designed to improve program performance or nuclear refueling or defueling of an aircraft carrier and any concurrent complex overhaul."[2] Also excluded is "the procurement of parts for safety modifications."[3]

10 U.S.C. §2320, Rights in Technical Data

This section of the U.S.C. calls upon the Secretary of Defense (SECDEF) to "prescribe regulations to define the legitimate interest of the United States and of a contractor or sub-contractor in technical data pertaining to an item or process. Such regulations shall be included in regulations of the Department of Defense prescribed as part of the Federal Acquisition Regulation."[4]

---

1 U. S. Government Publishing Office. "United States Code, Title 10 – Armed Forces," Subtitle A - General Military Law, Part IV – Service, Supply, and Procurement, Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, Section 2460 – Definition of Depot-Level Maintenance and Repair, https://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE&searchPath=Title+10%2FSubtitle+A%2FPart+IV%2FCHAPTER+137&oldPath=Title+10%2FSubtitle+A%2FPART+IV&isCollapsed=true&selectedYearFrom=2014&ycord=585. (In Appendix E, all subsequent references to 10 U.S.C. are based on this website.)

2 Ibid.

3 Ibid.

4 10 U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 137 – Procurement Generally, § 2320 – Rights in Technical Data.

Provisions to be included in DOD regulations establish the relationship between the technical data rights conveyed, based on which party or parties has paid for the development of the item or process. Three such relationships are possible:

When Government funds are provided to a contractor to wholly develop an item or process, the Government "shall have unlimited right to—(i) use technical data pertaining to the item or process; or (ii) release or disclose the technical data to persons outside the government or permit the use of the technical data by such persons."[5]

When an item or process is developed wholly with private funds, "the contractor or subcontractor may restrict the right of the United States to release or disclose technical data pertaining to the item or process to persons outside the government or permit the use of the technical data by such persons."[6] This does not apply to form, fit, or function-related technical data, technical data pertaining to "operations, maintenance, installation, and training (other than detailed manufacturing or process data); or technical data "otherwise publically available or has been released or disclosed by the contractor or subcontractor without restriction on further release or disclosure."[7] Furthermore, when required for the segregation or reintegration of an item or process, the Government may provide and allow for the use of this technical data by a non-Government entity, but the further use or disclosure of the technical data by that entity is prohibited.[8]

When both Government and private funds pay for the development of an item or process, the "respective rights" of both parties are to "be established as early in the acquisition process as practicable (preferably during contract negotiations)."[9] In such cases, "the United States shall have government purpose rights in such technical data," unless the SECDEF makes the determination that negotiating for different rights would be best for the Government.[10]

Provisions pertaining to technical data should be incorporated, "whenever practicable," into contracts between the Government and a contractor.[11] Among such provisions

---

5 Ibid.

6 Ibid.

7 Ibid.

8 Ibid.

9 Ibid.

10 Ibid.

11 Ibid.

are the definition of the respective rights of the two parties to technical data, and the identification of any technical data to be delivered and when those deliveries are to occur.[12] An additional provision of note indicates "that, in addition to technical data that is already subject to a contract delivery requirement, the United States may require at any time the delivery of technical data that has been generated or utilized[13] in the performance of a contract, and compensate the contractor only for reasonable costs incurred for having converted and delivered the data in the required form" if—

(A) the technical data is needed for the purpose of reprocurement, sustainment, modification, or upgrade (including through competitive means) of a major system or subsystem thereof, a weapon system or subsystem thereof, or any noncommercial item or process; **and** [emphasis added]

(B) the technical data—

(i) pertains to an item or process developed in whole or in part with Federal funds; or

(ii) is necessary for the segregation of an item or a process from, or the reintegration of that item or process (or a physically or functionally equivalent item or process) with, other items or processes.

For major systems and subsystems, program managers are "to assess the long-term technical data needs of such systems and subsystems and establish corresponding acquisition strategies that provide for technical data rights needed to sustain such systems and subsystems over their life cycle. Such strategies may include the development of maintenance capabilities within the Department of Defense or competition for contracts for sustainment of such systems or subsystems."[14] Of further interest for purposes of competition, the SECDEF is also to "establish programs which provide domestic business concerns an opportunity to purchase or borrow replenishment parts from the United States for the purpose of design replication or modification, to be used by such concerns in the submission of subsequent offers to sell the same or like parts to the United States."[15]

---

12 Ibid.

13 The FY 2017 NDAA, in conference as of the writing of this paper, deletes "or utilizes," the concern being that technologies developed at private expense prior to the contract should be subject to only limited rights.

14 10 U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 137 – Procurement Generally, § 2320 – Rights in Technical Data.

15 Ibid.

10 U.S.C. §2321, Validation of Proprietary Data Restrictions

This section establishes that contractors entering into a contract with the government "shall be prepared to furnish to the contracting officer a written justification for any use or release restrictions … asserted by the contractor or subcontractor."[16] It further establishes that the SECDEF shall have in place a review process to provide "a thorough review of any use or release restriction asserted with respect to technical data."[17] Asserted restrictions on technical data can be challenged by the SECDEF, if—

"(A) reasonable grounds exist to question the current validity of the asserted restriction; and

(B) the continued adherence by the United States to the asserted restriction would make it impracticable to procure the item to which the technical data pertain competitively at a later time."[18]

Generally, a challenge may only be waged through a six year time period that commences either with the date of final payment on a contract requiring the delivery of technical data, or the delivery date for the technical data on contract, "unless the technical data involved—

(i) are publicly available;

(ii) have been furnished to the United States without restriction;

(iii) have been otherwise made available without restriction; or

(iv) are the subject of a fraudulently asserted use or release restriction."[19]

If a challenge is waged concerning "a use or release restriction that is asserted with respect to technical data" of a commercial item developed exclusively with private funds, it should be assumed that the restriction is justified, regardless of whether formal justification is submitted by the contractor, except if "the Department of Defense demonstrates that the item was not developed exclusively at private expense."[20] Other than commercial off-the-shelf items, it is the responsibility of the contractor to prove that the item was developed

---

16 10 U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 137 - Procurement Generally, §2321 – Validation of Proprietary Data Restrictions.

17 10 U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 137 – Procurement Generally, § 2320 – Rights in Technical Data.

18 Ibid.

19 Ibid.

20 Ibid.

solely with private funds, if technical data use or release restriction assertion is challenged.[21] The contracting officer is responsible for issuing a decision based upon a review of the challenge and any submitted justification as to "the validity of the asserted restriction."[22] The losing party of the decision is responsible for paying the other party for any expenses incurred in either reviewing the asserted restrictions or defending the asserted restrictions.

10 U.S.C. §2464, Core Depot-Level Maintenance and Repair Capabilities

This section speaks to "core logistics capabilities" (including maintenance and repair) that are to be maintained by facilities that are Government-owned and–operated in order "to ensure a ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements."[23] Core logistics capabilities are identified by the SECDEF, with the Chairman of the Joint Chiefs of Staff, for weapon systems and such capabilities are to be established "not later than four years after achieving initial operational capability."[24] Although not mentioned in this section of the U.S.C., certain IP and technical data rights and deliverables are required by these organic facilities in order to support their ability to perform the identified core logistics capabilities.

10 U.S.C. §2466, Limitations on the Performance of Depot-Level Maintenance of Materiel

This section of U.S.C. establishes that: "Not more than 50 percent of the funds made available in a fiscal year to a military department or a Defense Agency for depot-level maintenance and repair workload may be used to contract for the performance by non-Federal Government personnel of such workload for the military department or the Defense Agency."[25] Thus, the remainder of that funding must go for DOD personnel to perform depot-level maintenance and repair, which requires that the government have access to the

---

[21] Ibid.

[22] Ibid.

[23] 10 U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2464 – Core Logistics Capabilities

[24] Ibid. This statement does not apply to (1) commercial items that are widely available in the commercial market and are used in the same form as commercially, (2) special access programs, and (3) nuclear aircraft carriers.

[25] 10, U.S.C., Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2466 – Limitations on the Performance of Depot-Level Maintenance of Material.

necessary technical data and software with sufficient rights. This linkage to IP and technical data rights is not highlighted in this section's provisions.

10 U.S.C. §2474, Centers of Industrial and Technical Excellence: Designation; Public-private Partnerships

This section outlines the provision of §2474 whereby designations as "Centers of Industrial Excellence" (CITE) are to be bestowed by the appropriate Secretary on depots and arsenals of the Military Departments and Defense Agencies.[26] Also §2474 specifies that these centers are encouraged "to enter into public-private cooperative arrangements" or public- private partnerships,[27] stating that the objectives of such arrangements are to:

- Maximize the utilization of CITE capacities,
- Reduce the cost of ownership,
- Leverage private sector investment in plants and equipment,
- Promote the undertaking of commercial business ventures at the CITEs, and
- Foster cooperation between DOD and private industry.

Through a public-private partnership, non-Government personnel can perform depot-level maintenance and repair work and the expenditures for that work do not count against the not greater than 50 percent rule established by 10 U.S.C. 2466.[28]

Similar to the U.S.C. sections described in the previous two sections of this paper, 10 U.S.C. 2474 does not specifically identify IP or technical data rights or deliverables; however, these are obviously requirements for enabling the work of the CITEs or any public-private partnerships into which they may enter.

Defense Federal Acquisition Regulation Supplement (DFARS)

The DFARS[29] is DOD-related supplemental material to the Federal Acquisition Regulation (FAR). In addition to expanding on the requirements outlined in Title 10, it provides specific contract clauses that supplement the FAR and specifies how rights assertions are to be labeled.

---

[26] 10 U.S.C. –Subtitle A – General Military Law, Part IV Service, Supply, and Procurement, Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2474 – Centers of Industrial and Technical Excellence: designation; public-private partnerships.

[27] Ibid.

[28] Ibid.

[29] See Defense Procurement and Acquisition Policy (DPAP), "Defense Federal Acquisition Regulation Supplement (DFARS) and Procedures, Guidance, and Information," http://www.acq.osd.mil/dpap/dars/dfarspgi/current/.

The following two parts of the DFARS are the most relevant to the subject of this project:

- **Part 227 – Patents, Data, and Copyrights, Subpart 227.71 – Rights in Technical Data**
  - Subpart 227.71 provides policy and procedures, and identifies relevant contract clauses for rights to technical data for acquiring commercial items, components, and processes; non-commercial items or processes; and other specific types of acquisition. For the acquisition of both commercial and non-commercial items and processes, DOD policy is to minimize the amount of technical data acquired. For commercial items and processes, this should be limited to "only the technical data customarily provided to the public," except for certain technical data that pertains to, form, fit and function, is required for maintenance and repair, relates to some portion of an item or process that was changed through Government funding. The decision as to which technical data to acquire with regard to non-commercial items and processes should correspond to the government's need. The policy for non-commercial items and processes additional detail on, among other topics, the development of solicitations and contracts (to include the data requirements), license rights, government rights, and deferred ordering and delivery.
- **Part 227 – Patents, Data, and Copyrights, Subpart 227.72 – Rights in Computer Software and Computer Software Documentation**
  - Subpart 227.72 provides policy and procedures and identifies relevant contract clauses for rights in computer software and computer software documentation.

Recent Federal Register Announcement

The Department has proposed to amend the DFARS parts pertaining to rights to technical data and software. These amendments are intended to address the following changes to 10 U.S.C. §2320 specified in Section 815 of the FY 2012 NDAA:

- Adds special provisions for handling technical data that are necessary for segregation and reintegration activities;
- Codifies and revises the policies and procedures regarding deferred ordering of technical data necessary to support DOD major systems or subsystems, weapons systems, weapon systems, or noncommercial items or processes;
- Expands the period in which DOD can challenge an asserted restriction on technical data from 3 years to 6 years;

- Rescinds changes to 10 U.S.C. 2320 from the NDAA for FY 2011; and
- Codifies Government purpose rights as the default rights for technical data related to technology developed with mixed funding.[30]

DOD Policy, Regulations, and Guidance

Better Buying Power (BBP)

BBP was announced in June of 2010 by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) as a set of initiatives to improve efficiency in order "to deliver warfighting capabilities needed within the constraints of a declining defense budget by achieving better buying power for the Warfighters and the taxpayer.[31] The BBP memoranda are top-level policy directives that specify Departmental priorities in acquisition management to improve effectiveness and efficiency. Many of their provisions have been incorporated in DOD issuances upon their reissue.

Intellectual property and technical data rights have been part of BBP from the start. That signaled that the Department was placing a high priority on IP and technical data rights and their role in improving efficiency.

The first instantiation, BBP 1.0, introduced 23 actions, to include the "use [of] technical data packages and open systems architectures to support a continuous competitive environment," as part of its focus area to improve competition.[32] In order to remove obstacles to competition, a Milestone B requirement was established for "a business case analysis to be conducted in concert with the engineering and trade analysis that would outline an approach for using open systems architectures and acquiring technical data rights to ensure sustained consideration of competition in the acquisition of weapons systems."[33] A follow-on memorandum further specified that this requirement was to go into effect

---

30 "Defense Federal Acquisition Regulation Supplement: Rights in Technical Data and Validation of Proprietary Data Restrictions (DFARS Case 2012-D022), part V: Regulatory Flexibility Act," *Federal Register* 81, no. 116 (16 June 2016).

31 Department of Defense, Acquisition, Technology and Logistics, "Better Buying Power – BBP Background," accessed 14 July 2016, http://bbp.dau.mil/background.html.

32 Department of Defense, "Better Buying Power: Mandate for Restoring Affordability and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, June 28, 2000), 5.

33 Department of Defense, "Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, September 14, 2010), 10.

15 November 2010, and that "the results of this analysis will be reported in the Acquisition Strategy Report and in the competition strategy."[34]

In 2012, BBP 2.0 introduced 36 initiatives to continue what was initiated under BBP 1.0.[35] The following language was contained in a preliminary version of BBP 2.0 under the "Promote Effective Competition" focus area:

> **Enforce Open System Architectures and Effectively Manage Technical Data Rights**
>
> This item is continued from BBP 1.0 and will focus on improving the Department's early planning for open architectures and the successful execution of the plan to provide for open architectures and modular systems. This will include the development of a business model and associated IP strategy (data rights planning) that can be implemented over the life cycle of the product, starting while competition still exists."[36]

Roughly 6 months after the memorandum announcing BBP 2.0, a follow-on, implementation memo was issued by the USD(AT&L). Under "Promote Effective Competition," guidance and actions were provided regarding open system architectures and the management of technical data rights. It states: "We must improve the Department's early planning for obtaining technology through an open business model concept with emphasis on having open, modular system architectures that can be supported through multiple competitive alternatives."[37] The following five actions were directed:

- Republish OSA Contract Guidebook for PMs version 1.1, to reflect the Department's Open Systems Architecture and Data Rights by June 1, 2013, assigned to Defense Procurement and Acquisition Policy (DPAP) with coordination from the Deputy Assistant Secretary of the Navy for Research Development Test and Evaluation (DASN(RDT&E).[38]

---

[34] Department of Defense, "Implementation Directive for Better Buying Power – Obtaining Greater Efficiency and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, November 3, 2010), 4–5.

[35] Department of Defense, Acquisition, Technology and Logistics, "Better Buying Power – BBP Background."

[36] Department of Defense, "Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, November 13, 2012), 5.

[37] Department of Defense, "Implementation Directive for Better Buying Power 2.0—Achieving Greater Efficiency and Productivity in Defense Spending," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 24, 2013), 18.

[38] See page E-26 for a description of the DOD Open Systems Architecture: Contract Guidebook for Program Managers v.1.1.

- Republish a Data Rights Brochure to update changes to the DFARS by October 1, 2013, assigned to DPAP with coordination from DASN(RDT&E).[39]
- Publish a replacement for DOD 5010.12M, *Procedures for the Acquisition and Management of Technical Data*, and coordinate to reestablish authorization for its use by January 1, 2014, assigned to DPAP with coordination from DASN(RDT&E).[40]
- Develop IP Strategy Guidance to support data rights planning by October 1, 2013, assigned to DPAP with coordination from DASN(RDT&E).[41]
- Continue developing new training and updated course curriculum, assigned to the Defense Acquisition University (DAU) with coordination from DASN(RDT&E).[42]

The current installment, BBP 3.0, commenced with the issuance of a September 2014 White Paper from the Office of the USD(AT&L). "BBP 3.0 continues the focus on continuous improvement with a new emphasis on initiatives that encourage innovation and promote technical excellence with the overarching goal of ensuring that the United States' military has the dominant capabilities to meet future national security requirements."[43] The BBP 2.0 initiative—"Enforce open system architectures and effectively manage technical data rights"—was identified to continue in 3.0 without change or some mods. A new initiative related to IP and technical data rights—"Use Modular Open Systems Architecture to stimulate innovation"—was added under the "Incentivize Innovation in Industry and Government" topic area.

The objective of this initiative is to continue DOD efforts to ensure that our designs are modular and that the government is in a position to control all the relevant interfaces so that competitors with superior technology have the opportunity to win their way onto our programs. Often, this design feature has been either traded away because of competing

---

[39] See page E-28 for a description of Understanding and Leveraging Data Rights in DOD Acquisitions—Better Buying Power Brochure.

[40] The 1993 version of DOD 5010.12M is summarized beginning on page E-16. A search for a more recent version has proven unsuccessful. As of October 2016 this manual appears to have been withdrawn as it is no longer available on the DOD Issuances web site.

[41] See page E-28 for a description of this Intellectual Property Strategy brochure.

[42] Department of Defense, "Implementation Directive for Better Buying Power 2.0—Achieving Greater Efficiency and Productivity in Defense Spending," 18. DAU has a continuous learning module, CLE 068, *Intellectual Property Rights.*

[43] Frank Kendall, "Better Buying Power 3.0," white paper (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, September 19, 2014), 2.

requirements or lost because the government has failed to secure technical control and ownership of all the needed interfaces, including those required for software integration.[44]

The task to "review and assess DOD's practices in Intellectual Property (IP) acquisition over the last several years" was assigned to the MOSA initiative team, with the outcomes of that review and assessment to be presented in the Fall of 2015.[45]

DOD Regulations

DOD regulations are defined in issuances of the Office of Secretary of Defense (OSD) and of the Military Departments. Time and other resources limited this review largely to OSD issuances; however, that should not be a serious deficiency, since the regulations of the Military Departments conform to the Department-wide regulations issued by OSD, except possibly for matters unique to a particular Military Department.

DOD regulations are issued in several forms—Directives (DODD), Instructions (DODI), Manuals, and Administrative Instructions.[46] There are also a number of issuances, such as guidebooks and best practices, which are not formally binding on the Military Departments, but rather, advisory in nature.

Intellectual property matters are addressed in a number of DOD regulations. Most IP issues of greatest interest to this review revolve around the acquisition of DOD programs. Consequently, this review focuses on acquisition regulations and is limited to those of greatest relevance.

DOD Directives

DODD 5000.01, *The Defense Acquisition System*,[47] provides top-level guidance on the acquisition and sustainment of DOD's weapon systems. It has nothing to say about IP or technical data rights.

---

44 Department of Defense, "Implementation Directive for Better Buying Power 3.0—Achieving Dominant Capabilities through Technical Excellence and Innovation," memorandum (Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 9, 2015), 14.

45 Ibid., 15.

46 There are also "Directive-Type Memoranda," which are interim issuances with a finite life (6 months, but can be extended) that provide direction until a formal document can be staffed and approved (which normally takes several months).

47 Department of Defense. "The Defense Acquisition System," Department of Defense Directive (DODD) 5000.01 (Washington, DC: USDAT&L, May 12, 2003, Certified Current as of November 20, 2007).

DOD Instructions

The most important issuance on DOD acquisition management is DODI 5000.02, *Operation of the Defense Acquisition System*, last issued in January 2015. This is the document that is of greatest interest in understanding DOD regulations regarding IP issues. We discuss both the current version and versions from the recent part, to illustrate how DOD's concerns about IP rights have evolved.

Current Version

DODI 5000.02 first mentions IP in the context of a program's Acquisition Strategy.[48] As a statutory requirement for Major Defense Acquisition Programs (MDAPs), an Acquisition Strategy "describes the Program Manager's plan to achieve program execution and programmatic goals across the entire program life cycle [and] summarizes the overall approach to acquiring the capability (to include the program schedule, structure, risks, funding, and the business strategy)."[49] An Acquisition Strategy is required for the first time at Milestone A, the point at which a program enters the technology maturation and risk reduction phase.[50] An IP strategy is one of a number of statutory requirements that are "satisfied in the Acquisition Strategy."[51]

Program management responsibilities specifically pertaining to an IP Strategy are elaborated as follows:

Program management must establish and maintain an IP Strategy to identify and manage the full spectrum of IP and related issues (e.g., technical data and computer software deliverables, patented technologies, and appropriate license rights) from the inception of a program and throughout the life cycle. The IP Strategy will describe, at a minimum, how program management will assess program needs for, and acquire competitively whenever possible, the IP deliverables and associated license rights necessary for competitive and affordable acquisition and sustainment over the entire product life cycle, including by integrating, for all systems, the IP planning elements required by subpart 207,106 (S-70) of the Defense Federal Acquisition Regulation Supplement. The IP Strategy will be updated throughout the entire product life cycle, initially as part of the Acquisition Strategy, and during the Operations and Support Phase as part of the Life-Cycle Sustainment

---

48 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, January 7, 2015), 18.

49 Defense Acquisition University, "Glossary of Defense Acquisition Acronyms and Terms – Acquisition Strategy," accessed July 7, 2016, https://dap.dau.mil/glossary/pages/1398.aspx.

50 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2015, 17.

51 Ibid., 47–48.

Plan. Program management is also responsible for evaluating and implementing open systems architectures, where cost effective, and implementing a consistent IP Strategy. This approach integrates technical requirements with contracting mechanisms and legal considerations to support continuous availability of multiple competitive alternatives throughout the product life cycle."[52]

The Program Manager will ensure resources are programmed and necessary IP deliverables and associated license rights, tools, equipment, and facilities are acquired to support each of the levels of maintenance that will provide product support; and will establish necessary organic depot maintenance capability in compliance with statute and the LCSP.[53]

The IP Strategy is not a one-time, static document. "The government will update the program IP Strategy (see Paragraph 6a(4) of Enclosure 2) to ensure the ability to compete future sustainment efforts consistent with the Acquisition Strategy to include competition for spares and depot repair."[54] "Acquisition of complete technical data packages" is identified as a strategy consideration for the Acquisition Strategy in terms of its coverage of "how program management will create and sustain a competitive environment, from program inception through sustainment."[55] To assist in being able to support future sustainment, a program's configuration management approach needs to "be consistent with" its IP Strategy.[56]

As part of life-cycle sustainment planning, program management develops a product support strategy, which as one of its minimum requirements includes "the necessary intellectual property (IP) deliverables and associated license rights, consistent with and integrated with the program IP Strategy."[57] To ensure the continued support of the system being acquired, the IP Strategy "becomes part of the Life-Cycle Sustainment Plan (LCSP) during Operations and Support (O&S)."[58] The IP Strategy is a required annex of the LCSP and is to be "updated appropriately during the O&S Phase."[59]

The current version of the DODI 5000.02 contains robust coverage of IP requirements. Intellectual property is identified as an important factor throughout the life cycle

---

52 Ibid., 76–77.

53 Ibid., 29.

54 Ibid., 20.

55 Ibid., 76.

56 Ibid., 84.

57 Ibid., 112.

58 Ibid., 48.

59 Ibid., 116.

and in particular to ensure the maintenance and repair of the system, to include through a competitive environment, as deemed appropriate. Program management is required to document and revise its IP Strategy from Milestone A through the O&S phase, first, as part of its Acquisition Strategy, and later, as part of the LCSP.

Previous Versions

IP requirements have not always been as robustly covered in previous versions of DODI 5000.02. This section summarizes the IP-related content contained in three previous versions of DODI 5000.02.

An Interim DODI 5000.02 was issued 25 November 2013. Although only an interim version, it replaced the 2008 version, except for Enclosure 9.[60] The IP-related content is very similar to that of the current version. The only difference identified was a nuance in the relationships between the IPS and the Acquisition Strategy and the LCSP. While the current 2015 version of DODD 5000.02 is clear that the IPS is a part of both the Acquisition Strategy and LCSP, depending upon the timeframe within a program, the interim 2013 version outlines a less formal or concrete relationship between these documents. According to the interim 2013 version, the IPS is to be "summarized in the Acquisition Strategy" and "presented with the Life-Cycle Support Plan."[61] Furthermore, unlike in the current 2015 version, the interim 2013 version does not indicate that the IPS is to be an annex of the LCSP.

Overall, the DODI 5000.02 issued in December 2008 contains less coverage of topics related to IP, than its 2013 successor document. It is noteworthy that IP rights were not addressed explicitly in the life-cycle sustainment context, where they are in fact most critical. Of further note, some terminology differences also exist between the two versions. The 2008 version of DODI calls for a Technology Development Strategy (TDS), in which a Data Management Strategy (DMS) is one of a number of content areas to be documented, although elsewhere a DMS is identified as a statutory requirement for MDAPs as part of a TDS or Acquisition Strategy, at Milestones A, B, C, and the FRP Design Review.[62] The

---

60 Department of Defense, "Defense Acquisition," memorandum (Washington, DC: Deputy Secretary of Defense for Acquisition, Technology, and Logistics (AT&L), November 26, 2013).

61 Department of Defense "Operation of the Defense Acquisition System," Interim Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, November 25, 2013), 52.

62 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, December 8, 2008), 17, 35. For ACAT II programs, a data management strategy is a statutory requirement and is to be a part of the Acquisition Strategy at Milestone B, Milestone C, and Full-Rate Production (FRP) Design Review. See Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02, 2008, 38.

only other related coverage is found in the "Systems Engineering: enclosure under the topic of "Data Management and Technical Data Rights," where it states the following:

> "a. Program Managers for ACAT I and II programs, regardless of planned sustainment approach, shall assess the long-term technical data needs of their systems and reflect that assessment in a Data Management Strategy (DMS). The DMS shall:
>
> (1) Be integrated with other life-cycle sustainment planning and included in the Acquisition Strategy;
>
> (2) Assess the data required to design, manufacture, and sustain the system, as well as to support recompetition for production, sustainment, or upgrades; and
>
> (3) Address the merits of including a priced contract option for the future delivery of technical data and intellectual property rights not acquired upon initial contract award and shall consider the contractor's responsibility to verify any assertion of restricted use and release of data.
>
> b. The DMS shall be approved in the context of the Acquisition Strategy prior to issuing a contract solicitation."[63]

Going back still further to the 2003 issuance of DODI 5000.02, no reference to IP or technical data rights was found.[64]

This review of DODI 5000.02 versions is evidence that DOD's concerns regarding IP and technical data rights have evolved over the last 12 years. The importance of IP and technical data rights is stressed more strongly in the two most recent versions of the instruction. These same most recent versions emphasize the importance of IP and technical data rights across the life cycle. Consequently, there is a possibility that at least some more "mature" acquisition programs (with a Milestone B prior to the 2013 issuance of DODI 5000.02) may not have planned as adequately as desired for IP rights and deliverables to support the sustainment phases of the programs.

DOD Manuals

DOD 5010.12-M, *Procedures for the Acquisition and Management of Technical Data*

As indicated, this manual is entirely dedicated to the topic of IP rights and data, but it is very dated—May 1993. As discussed previously, BBP 2.0 directed that this manual be

---

63 Ibid., 79.

64 Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, May 12, 2013).

brought up to date; however, that has not yet occurred. In fact, the document was taken down from the DOD Issuances website during the course of this project. Nonetheless, it is worth discussing since it is a useful document that will presumably be eventually reissued.

The purpose of DOD 5010.12-M is

> "… to provide a uniform approach to the acquisition and management of data required from contractors. The procedures are intended to provide data management tools necessary to minimize and standardize data requirements that will be included in DOD contracts."[65]

Through the procedures documented in DOD 5010.12-M, the following are intended to be achieved:

> C1.3.2.1. Establishing standards for determining what data must be acquired from contractors to meet DOD minimum essential needs.
>
> C1.3.2.2. Selecting data requirements through the "tailoring" process and giving priority to commercial data, where available and feasible.
>
> C1.3.2.3. Using the least intrusive procedures to acquire necessary data and data rights from contractors.
>
> C1.3.2.4. Ensuring selective acquisition of data in both paper form and in digital form. Data acquired in digital form must meet the requirements of Part 6, section N of DOD Instruction 5000.2 and DOD-STD-963 (references (f) and (g)), and the guidance in MIL-HDBK-59 (reference (h)).
>
> C1.3.2.5. Controlling the generation of data requirements.
>
> C1.3.2.6. Minimizing and preventing the proliferation of data requirements.
>
> C1.3.2.7. Providing for complete visibility of data requirements in contracts.
>
> C1.3.2.8. Ensuring that the price of data is commensurate with the benefits to be derived from the use of the data over the life cycle of the system or item.
>
> C1.3.2.9. Promoting optimum uniformity in the identification, development, access and control of data requirements in and between each DOD Component and to facilitate the exchange of data between the DOD Components.
>
> C1.3.2.10. Ensuring that the quality of the data meets the contractual requirements.
>
> C1.3.2.11. Ensuring timeliness, accuracy, and adequacy of the data delivered.

---

[65] Department of Defense, *Procedures for the Acquisition and Management of Technical Data*, DOD 5010.12-M (Washington, DC: Assistant Secretary of Defense (Production and Logistics). May 1993), 13.

C1.3.2.12. Utilizing, to the maximum extent, data generated in contractor format.

C1.3.2.13. Ensuring the proper marking of technical data or documents, for distribution.

C1.3.2.14. Ensuring compliance with all current DOD regulations on the selection, acquisition, and use of data.

C1.3.2.15. Ensuring that duplicate data are not ordered.

C1.3.2.16. Ensuring that the data ordered has actually been delivered to the Government.

C1.3.2.17. Promoting, to the maximum extent, competition in DOD acquisitions.

C1.3.2.18. Ensuring that technical data that exists in data repositories and interchanges is utilized to the maximum extent possible.

C1.3.2.19. Ensuring that data is delivered at the times and with the quality necessary to prevent schedule and use problems.[66]

Procedures are grouped in chapters, according to topic areas—"identification and establishment of data requirements," "acquisition of data," "distribution statements on technical data," "pricing of data," and "inspection and acceptance of data."[67] The Manual calls for the identification and establishment of data requirements to take place early in the planning for "any acquisition action."[68] "During the preliminary planning phase, a determination is made as to which stage in the life cycle the data is needed…."[69] Additional guidance encourages data requirements to be tailored to meet the needs for the program.[70] The concepts of deferred ordering and deferred delivery are discussed, as is the need to apply the appropriate distribution to the data "to indicate the extent of secondary distribution that is permissible without further authorization or approval of the controlling DOD office."[71]

---

66 Ibid., 13–15.

67 Ibid., 3–4.

68 Ibid., 17.

69 Ibid.

70 Ibid., 25–26.

71 Ibid., 45–46, 48.

Thus, it is apparent that DOD 5010.12-M provides a useful resource for program management personnel seeking guidance on procedures to follow pertaining to the identification and acquisition of required technical data. Despite its age, it remains remarkably relevant.

DOD Standard Practice

MIL-STD-31000A, *Department of Defense Standard Practice: Technical Data Packages*, 26 February 2013. This document contains "requirements for the deliverable data products associated with a technical data package (TDP) and its related TDP data management products."[72] A TDP is—

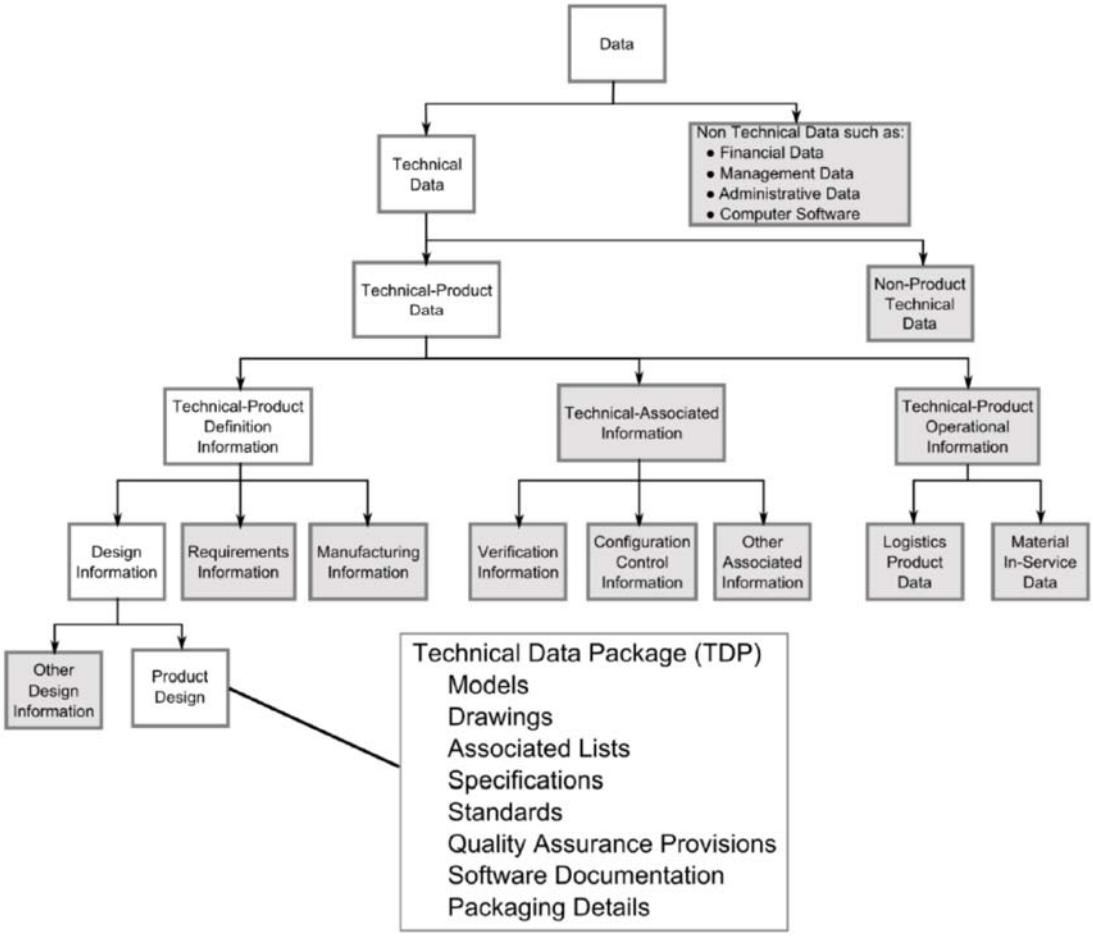
> "a technical description of an item adequate for supporting an acquisition, production, engineering, and logistics support (e.g., Engineering Data for Provisioning, Training, and Technical Manuals). The description defines the required design configuration or performance requirements, and procedures required to ensure adequacy of item performance. It consists of applicable technical data such as models, drawings, associated lists, specifications, standards, performance requirements, QAP, software documentation and packaging details."[73]

Of note, and as further illustrated in Figure E-1, the TDP is only a portion of the technical and other non-technical data that a program may determine it requires.

---

[72] MIL-STD-31000A, Department of Defense Standard Practice: Technical Data Packages, 26 February 2013, 1.

[73] MIL-STD-31000A, 8–9.



Source: Department of Defense, "Standard Practice – Technical Data Packages," MIL-STD-31000A (Picatinny Arsenal, NJ: Commander, U.S. Army ARDEC, ATTN: RDAR-QES-E, 26 February 2013), 2.

Figure E-1. Relationship of TDP to Other Technical and Non-Technical Data Needs

MIL-STD-31000A covers TDPs but not software.

Departmental Guidance Regarding IP

As noted previously, DOD issues a number of guidebooks, which, though not binding on the Components, have considerable "moral authority" in encouraging sound practices.

Defense Acquisition Guidebook

Note: The version of the *Defense Acquisition Guidebook* available for this review through the Defense Acquisition University web site does not yet include any modifications reflective of any changed content in the 2015 DODI 5000.02.

The *Defense Acquisition Guidebook*, issued and kept up to date on a website by the Defense Acquisition University, is the preeminent source for best practices in defense

acquisition, delivering "tailorable best practices to the Defense acquisition workforce.[74] Intellectual property rights and data are covered extensively in three chapters — Chapter 2, "Program Strategies, Chapter 4, Systems Engineering, and Chapter 5, Life-Cycle Logistics.

In Chapter 2, "2.8.7.6. Technical Data Rights Strategy (formerly the Data Management Strategy)" falls under "2.8.7 Business Strategy" within the "2.8 Technology Development Strategy/Acquisition Strategy Outline." This section contains content that should be included in a Technical Data Rights Strategy, while also providing notes and considerations to further inform a program's effort to develop such a strategy to address "how the program will provide for rights, access, or delivery of technical data the government requires for the system's total life cycle sustainment."[75] The analyses used to develop the strategy includes engineering tradeoff analysis in conjunction with business case analyses to weigh the acquisition of technical data and rights and the use of open systems architectures and whether "a priced contract option for the future delivery of technical data and IP rights not acquired upon initial contract award" makes sense for the program.[76] Furthermore, the program is to capture its analysis of the risk "that the contractor may assert limitations on the government's use and release of data."[77]

In Chapter 4, "4.3.8. Technical Data Management Process" falls under "4.3. Systems Engineering Processes."

Through the Technical Data Management process, the program identifies, acquires, manages, maintains, and ensures access to the technical data and computer software required to manage and support a system throughout the acquisition life cycle. Key Technical Data Management considerations include understanding and protecting government IP rights, achieving competition goals, maximizing options for product support, and enabling performance of downstream life-cycle functions.[78]

Activities of the Technical Management process include identification of data requirements; acquisition of the data; receipt, verification, and acceptance of the data; storage and control of the data; and use and exchange of the data. The guidance highlights that

---

74 Defense Acquisition University Website, *Defense Acquisition Guidebook*, "Foreword," accessed July 7, 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=511646&lang=en-US.

75 Defense Acquisition University Website, *Defense Acquisition Guidebook* – "2.8.7.6. Technical Data Rights Strategy (formerly the Data Management Strategy)," accessed 7 July 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=510071.

76 Ibid.

77 Ibid.

78 Defense Acquisition University Website, *Defense Acquisition Guidebook* – "4.3.8. Technical Data Management Process," accessed 7 July 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=638337&lang=en-US.

programs should not merely focus on a TDP, but "also consider all product related data (e.g., technical manuals, repair instructions, and design/analysis data) to

- Allow logistics support activities,
- Better enable sustainment engineering, and
- Apply, implement and manage product upgrades.

The relevant content in Chapter 5 is much sparser in terms of specific IP and technical data-related content than that in Chapters 2 and 4. This content is contained in Section "5.1.6. Technical Data, Computer Software, and Intellectual Property Rights" within "5.1. Life-Cycle Sustainment in the Defense Acquisition Management System."[79] The briefer content of this section likely reflects that, although IP and technical data rights are important to the effective execution of sustainment activities, the work to ensure access for sustainment purposes is best pursued earlier in the program and thus covered by earlier chapters. "Unless data rights considerations are considered up-front when developing an acquisition strategy, critical data and software may not be specified for delivery, rendering it unavailable (or unaffordable) years later for use on a program during its sustainment phase." Because of its importance, "the PSM needs to pay particular attention to"

- Data deliverables included in the RFPs and subsequent contracts and
- Data rights, including the responses to the contractor's data assertion lists.

The data management approach including how the data will be delivered, accessed, maintained, and protected.[80]

Logistics Assessment Guidebook[81]

DODI 5000.02 requires that MDAPs conduct an "Independent Logistics Assessment" (ILA)[82]:

> The DOD Components will conduct Independent Logistics Assessments (ILAs) for all weapon system MDAPs prior to Milestones B and C and the FRP Decision to assess the adequacy of the product support strategy, and to identify features that are likely to drive future operating and support costs, changes to system design that could reduce costs, and effective strategies

---

79 Defense Acquisition University Website. *Defense Acquisition Guidebook* – "5.1.6. Technical Data, Computer Software, and Intellectual Property Rights," *Defense Acquisition Guidebook*, accessed 7 July 2016, https://acc.dau.mil/CommunityBrowser.aspx?id=489751&lang=en-US.

80 Ibid.

81 Department of Defense, *Logistics Assessment Guidebook* (Washington, DC: USDAT&L, 2011).

82 In response to Section 832, P.L. 112-81 (NDAA for FY 2012).

> for managing such costs. The reviews will focus on sustainment planning and execution, to include the core logistics analyses and establishment of organic capabilities.[83]

DOD published the *Logistics Assessment Guidebook* to facilitate such assessments. Section 7 of the guidebook concerns technical data and comprises a table of detailed assessment criteria to govern the acquisition technical data at the stages of the acquisition process from Milestone C through Full Rate Production. To illustrate this content, entry 7.1.2 of the table specifies that "A technical data management strategy has been developed that is • documented in the LCSP and Acquisition Strategy; • supports recompetition for production, sustainment, or upgrade; and • addresses the merits of including priced contract options for future delivery of technical data and intellectual property rights and addresses restricted use and data release." These steps are to be fully implemented prior to Milestone B.

Prior to Milestone C, entry 7.1.3 specifies that

> Technical data (as defined in the program DMS) has been ordered using contract statements of work, Contract Data Requirement Lists (CDRL), Data Item Descriptions (DID), and appropriate contract clauses. Government data rights have been agreed to and documented in the contracts.[84]

Thus, it is seen that this guidance is quite robust in informing acquisition personnel of the necessity to plan for and, where possible, implement the acquisition of technical data needed for sustainment and reprocurement.

Product Support Manager's (PSM) Guidebook

PSMs are "the individual[s] responsible for managing the package of support functions required to field and maintain the readiness and operational capability of major weapon systems, subsystems, and components, including all functions related to weapon system readiness, in support of the program manager's life cycle management responsibilities."[85] The Product Support Manager Guidebook is a resource to which a PSM can turn for additional guidance in performing responsibilities to develop a product support strategy for a program. Throughout the guidebook IP and technical data are mentioned as considerations and/or exit criteria for milestones and phases throughout the acquisition life cycle. This information is not overly detailed. For example, Appendix A contains information on

---

[83] Department of Defense, "Operation of the Defense Acquisition System," Department of Defense Instruction (DODI) 5000.02 (Washington, DC: USDAT&L, January 7, 2015), 117.

[84] Department of Defense, *Logistics Assessment Guidebook*, 42.

[85] Defense Acquisition University, "Glossary of Defense Acquisition Acronyms and Terms – Product Support Manager (PSM)," accessed July 8, 2016, https://dap.dau.mil/glossary/pages/2909.aspx.

each of the 12 integrated product support elements of which "technical data" is one; however, only the objective and a brief description is provided for each element.[86] Appendix J of this document presents additional references and resources of interest to a PSM. Of note, among the statutory references provided are those sections of Title 10 of the U.S.C. that establish the requirement for organic core maintenance and repair capabilities, limits the percentage of depot-level maintenance and repair that can be performed by non-government personnel, and designate CITEs (10 U.S.C. §2464, 10 U.S.C. §2466, and 10 U.S.C. §2474); however, the two sections most relevant specifically to IP and technical data rights, 10 U.S.C. §2320 and §2321, are not cited.[87]

Integrated Product Support Element Guidebook

The *Integrated Product Support Element Guidebook* is a Defense Acquisition University resource developed to further amplify PSM guidance, particularly with regard to the twelve integrated product support elements.[88] Chapter 7 of this guidebook contains guidance on one of these integrated product support elements, technical data. This chapter touches upon many topics that would be of interest to program management in grappling with IP data rights and data deliverables. The objective of the technical data integrated product support element is as follows:

- Identify, plan, validate, resource and implement management actions to develop and acquire information to
  - Operate, maintain, train on the equipment to maximize its effectiveness and availability;
  - Effectively catalog and acquire spare/ repair parts, support equipment, and all classes of supply;
  - Define the configuration baseline of the system (hardware and software) to effectively support the Warfighter with the best capability at the time it is needed.[89]

Technical data are defined as "recorded information of scientific or technical nature, regardless of form or charter (such as equipment technical manuals and engineering

---

86 Department of Defense, *Product Support Manger Guidebook* (Washington, DC: Office of the Deputy Assistant Secretary of Defense for Materiel Readiness, June 2016), 81.

87 Ibid., 115.

88 Defense Acquisition University, *Integrated Product Support Element Guidebook* (Washington, DC: Defense Acquisition University, December 2011), 22.

89 Ibid., 344.

drawings), engineering data, specifications, standards and Data Item Descriptions (DID)."[90] Of note, the chapter further highlights that "technical manuals (TMs) including Interactive Electronic Technical Manuals (IETMs) and engineering drawings are the most expensive and probably the most important data acquisition made in support of a system. TMs and IETMs provide the instructions for operation and maintenance of a system."[91] TMs and IETMs are among a number of "Technical Data Products" identified later in the chapter.[92]

Under "Product Support Manager Activities," the requirement for a Technical Data Rights Strategy is reiterated, along with a summary of the different technical rights categories that exist and how data rights control how the data can be used.[93] "Data necessary for installation, operation, maintenance, or training purposes (other than detailed manufacturing or process data)" are listed among several types of data, which are required by regulation to be provided with unlimited rights.[94]

Another section of this chapter focuses on the role of technical data throughout the defense acquisition life cycle of a system. A table in this section describes activities related to technical data corresponding to acquisition phase (of note, these are not the phases of the current Defense Acquisition System).[95] "The entire Program Management Team, led by the Program Manager and Product Support Manager, participates in determining data requirements and in preparing the contracting documentation."[96] The use of Contractor Data Requirements Lists (CDRLs) and Data Item Descriptions (DIDs) are identified as the means for identifying technical data requirements and should be integrated into contracts.[97] Four methods—deferred delivery, deferred ordering, priced option agreements, and data

---

90 Ibid.

91 Ibid. Later, on page 354 of this guidebook's "Technical Data" chapter, technical manuals are described as follows: "A technical manual is a publication that contains instructions for the installation, operation, maintenance, training, and support of weapon systems, weapon system components, and support equipment. … A TM normally includes operational and maintenance instructions, parts lists or parts breakdown, and related technical information or procedures exclusive of administrative procedures. Technical Orders (TO) that meet the criteria in this definition may also be classified as TMs."

92 Ibid., 353–356.

93 Ibid., 345–346.

94 Ibid., 346.

95 Ibid., 367–370.

96 Ibid., 372.

97 Ibid., 370–371, 374.

escrow—are describe as options for when "immediate delivery of one or more Technical Data Packages (TDPs) is not required."[98]

Performance-Based Logistics (PBL) Guidebook

Content pertaining to IP and data right issues are highlighted as new material incorporated into the 2016 issuance of the *PBL Guidebook: A Guide to Developing Performance-Based Arrangements*.[99] An IPS that is part of an Acquisition Strategy is one of a number of key considerations identified that "support[s] performance-based solutions," while also facilitating "provider and system/subsystem options for PBL."[100] Intellectual property should be considered in the assessment of a PBL partnership.[101]

The ownership of data rights should be examined to help determine the feasibility of an arrangement change based on technical data availability. If Government owns the technical data, the program has more options to pursue a PBL, because it can choose among multiple potential providers. If the TDP or data rights are not purchased as part of the initial acquisition, limitations can occur for that particular program. If a lack of technical data rights exists, Services will be limited to the removal and installation of units. This also places limitations on conducting diagnostic testing and work against organic or other alternate repairs. If contracts with subcontractors exist, restrictions in independently selling technical data to that Service also confine the Service's range of future sustainment options.[102]

As part of a PBL partnership assessment, the PSM is to assess a number of alternatives. "Alternatives should represent different methods and providers of product support, and should appropriately consider the constraints/opportunities afforded by the systems current Intellectual Property environment."[103] The Guidebook further provides a set of specific considerations for a program performing such an assessment depending on whether the program possesses the necessary IP.[104]

---

98 Ibid., 374.

99 Department of Defense, *PBL Guidebook: A Guide to Developing Performance-Based Arrangements* (Washington, DC: Assistant Secretary of Defense for Logistics and Material Readiness, 3 March 2016), 3.

100 Ibid., 22.

101 Ibid., 58.

102 Ibid., 159.

103 Ibid., 59.

104 Ibid., 60.

DOD Open System Architecture: Contract Guidebook for Program Managers, v.1.1

DOD Open Systems Architecture: Contract Guidebook for Program Managers, v.1.1 "provides recommendations for writing an OSA-based statement of work, guidance on special interest requirements, recommended contract line items, and guidance on obtaining IP rights to support full life-cycle competition and recommended CDRLs. Programs can tailor the principles in the guidebook to the acquisition of any system or service. The guide is intended to augment, rather than replace, existing contractual source materials such as the Federal Acquisition Regulations (FAR) and the Defense Acquisition Regulation Supplement (DFARS). Users should consult the most recent version of the FAR and DFARS, in addition to the guidebook, when developing acquisition materials."[105]

Intellectual Property: Navigating through Commercial Waters

Although admittedly dated (2001), this document, targeted at contracting officers, is referenced in the *Integrated Product Support Element Guidebook* and appears to provide information that would be of use to any programs negotiating for IP rights and deliverables. "This guide is intended to provide a straightforward discussion of the information contracting officers need to negotiate IP arrangements."[106] Content of this guidance document includes "fundamental principles and concepts of negotiating IP rights," activities that can be undertaken "that may reduce IP-related problems later in the acquisition process," and a number of "major IP issues that keep some companies from responding to Government solicitations."[107] The following topics/issues are discussed:

- Application of the Patent Clauses,
- Previously Developed Intellectual Property,
- Alternatives for Acquiring Commercial Research Services,
- Conceived or First Actually Reduced to Practice,
- Disclosure and Filing Requirements,
- Subcontractor Title Retention,
- United States Manufacturing Requirements,
- Compulsory Licensing ("March-In Rights"),

---

[105] Department of Defense, "Initiatives: Open Systems Architecture (OSA)" (Washington, DC: Office of the Deputy Assistant Secretary of Defense (ODASD) for Systems Engineering, 22 June 2016).

[106] Department of Defense, *Intellectual Property: Navigating through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*, Version 1.1 (Washington, DC: Office of the Under Secretary for Defense for Acquisition, Technology, and Logistics, October 15, 2001), iv.

[107] Ibid., iv–v.

- Government-Wide Licensing,
- Government Liability for Unauthorized Uses by Third Parties,
- Specifically Negotiated License Rights,
- Marking Requirements,
- Removal of Unjustified or Nonconforming Markings,
- Data with Omitted Markings,
- Copyrights,
- Government Purpose Rights,
- Emergency Repair and Overhaul,
- Subcontractor Flow-Down,
- Copies of Current Licenses,
- Information Disclosure Constraints, and
- Deferred Ordering and Deferred Delivery.[108]

Open Systems Architecture—Data Rights Team Brochures

Guidance: Intellectual Property Strategy Brochure

This brochure provides an overview of important factors pertaining to an IP strategy, to include what an IPS is, who is responsible, when an IPS should be developed and how it is related to competition. Data rights are an important element to be addressed by an IPS; however, IP deliverables are also required. "If there are no data deliverables, then there is no way for the Government to actually exercise its data rights."[109] Getting the timing right for these two elements can be difficult. "IP rights are allocated early, at first development or first delivery of the technology, even though the Government's need to use or release the delivered data likely occurs later in the program's life cycle, sometime significantly later."[110]

The brochure outlines the idea of separating a system into functional modules at a segregable level and then applying one of two different models—a "restrictive-proprietary

---

[108] Ibid., viii–ix.

[109] Department of Defense, "Guidance: Intellectual Property Strategy" (Washington, DC: Department of Defense Open Systems Architecture Data Rights Team, August 2014), 2.

[110] Ibid., 2.

(R-P) model" and an "open-competitive (O-C) model" for sustainment activities.[111] Each of these models requires a different combination of date rights and deliverables that a program would need to support its planned approach for sustainment.

In addition to basic information regarding data rights and deliverables, the brochure offers a set of guiding principles to IP management and an IPS checklist that outlines activities corresponding to different phases of the contract process.[112] The guiding principles and checklist would provide a useful resource for program's grappling with identifying and then negotiating the data rights and deliverables needed to support sustainment.

Understanding and Leveraging Data Rights in DOD Acquisitions—Better Buying Power Brochure

This brochure provides an overview of the different types of data rights that exist for technical data and computer software documentation and how they relate to the permission to use this data within the Government or by a third party. The concept of a priced option "for data deliverables or data rights that may be needed in the future but that are not ordered up front" can be used to delay ordering technical data when it is not yet known what deliverables are needed or to delay delivery of technical data until it is needed.[113] The brochure also points the user to additional resources pertaining to data rights.

---

[111] Ibid., 2

[112] Ibid., 3–4.

[113] Department of Defense, "Understanding and Leveraging Data Rights in DOD Acquisitions" (Washington, DC: Department of Defense Open Systems Architecture Data Rights Team, October 2014).

Appendix F.
Bilateral Monopolies and Contracting for Intellectual Property in the Department of Defense (DOD)

Note: This appendix was authored by Alan B. Gelder.

A bilateral monopoly is a market that consists of one buyer and one seller—a common setting in defense acquisition.

The Department of Defense (DOD) is the sole buyer (a monopsony) in the U.S. defense marketplace.[1] Moreover, even at the initial bidding stage, many DOD contracts have at most two or three possible sellers. Once a seller has been selected and the contract is underway, the seller essentially becomes a monopolist for the life of the product because the cost of switching to another company and beginning the production cycle anew can be prohibitive.[2] Unlike competitive markets, which have a single clearing price, bilateral monopolies admit a range of prices at which both parties are potentially willing to trade—some favoring the buyer and others favoring the seller. Hence the bilateral monopoly problem, at its core, is a bargaining problem.[3] From a policy design standpoint, bargaining problems are fraught with challenges. Impossibility results in the theoretical literature delineate conditions under which the parties simply will not willingly trade absent outside intervention. For instance, if the seller does not know the buyer's true value of the object in question and vice versa, then, without a subsidy from a third party, no possible policy can result in a willing trade—one side would necessarily be strictly worse off.[4] A completely efficient solution is therefore unfortunately out of the question. That said, there are

---

1 Even defense Foreign Military Sales are purchased through DOD channels.

2 The Great Engine War of the 1980s was a notable example of a case in which the existing supplier (Pratt and Whitney) was negligent enough in responding to DOD that it paved the way for a competitor (General Electric) to enter the stage. The subsequent dual-sourcing between the two companies introduced a healthy degree of competition for keeping each firm in check. While a firm's entry often serves as a balancing force for breaking down monopolies, the defense industry has unfortunately witnessed little entry—especially when an existing sole-source producer is already present.

3 This is a longstanding result in economics. Early references include A. L. Bowley, "Bilateral Monopoly," *The Economic Journal* 38, no. 152 (1928): 651–659 and John F. Nash, Jr., "The Bargaining Problem," *Econometrica* 18, no. 2 (April 1950): 155–162.

4 See Roger B. Myerson and Mark A. Satterthwaite, "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory* 29, no. 2 (April 1983): 265–281.

still meaningful avenues for improving bargaining postures and implementing regulations to mitigate the problem.

The more alternatives DOD has, the stronger its bargaining power is likely to be, which typically equates to greater bargaining power at the earlier stages of the acquisition process (especially before a sole-source contract has been finalized). Writing an appropriate contract is therefore crucial for establishing a long-term bargaining posture. In writing contracts, a natural tradeoff occurs between spending resources upfront in making the contract as complete as possible and writing an incomplete contract that will likely lead to costly problems in the future. However, the larger the anticipated problems, the more it makes sense to invest in detailed complete contracts early on, where feasible.

Past experience can serve as an important bellwether for gaging the potential for contractual disputes. Crocker and Reynolds report,[5] for instance, that beginning in the late 1970s and continuing throughout the 1980s, Pratt and Whitney exhibited "a substantial increase in litigation"[6] in acquisition disputes with DOD, while the number of litigations from General Electric remained low and "relatively stable over time."[7] Due to Pratt and Whitney's opportunistic philosophy for reaping gains from litigation, there was a "substantial difference in the nature of the contracts negotiated contemporaneously with Pratt and Whitney and General Electric in the dual-source regime."[8] The contracts with Pratt and Whitney were appropriately more complete. Crocker and Reynolds also make the point that the large number of uncertainties that are inherently a part of the early stages of research, development, and testing can legitimately form a prohibitive barrier to writing complete contracts. However, as the production process matures and "technological problems [are] ironed out,"[9] it is cost efficient and in DOD's interest to write contracts that are more complete. Contracting for intellectual property (IP) might be able to follow similar lines, with past experience and the maturation of the project serving as guideposts; however, by the time of that maturation, DOD will typically be in a sole-source situation with limited leverage.

---

5 Keith J. Crocker and Kenneth J. Reynolds, "The Efficiency of Incomplete Contracts: An Empirical Analysis of Air Force Engine Procurement," *The RAND Journal of Economics* 24, no. 1 (Spring 1993): 126–146.

6 Ibid., 135.

7 Ibid.

8 Ibid., 144.

9 Ibid.

An important observation regarding IP is that across the broad range of firms that conduct research and development, "only a small fraction"[10] actually rely on patents to protect their innovations. Formal IP rights, such as patents and copyrights, are much less used in practice than trade secrets. Exceptions tend to be concentrated in specific industries in which other factors are at play. The pharmaceutical industry, in particular, is steeped in patents, but it is also an industry in which government regulation requires a large degree of disclosure before new products can enter the market. Patents are therefore used to the extent that secrecy is not an option. Even when patents are filed, firms go to great extents to be as vague as possible in their description of the product.[11] Given that pattern, it is not surprising that the firms with which the DOD interacts anxiously protect their trade secrets—secrets that often embody state-of-the-art technologies and practices that make these firms marketable. However, as with any regulated industry, a balance must be struck between the private desires of firms and competing public demands.

Although DOD has a Title 10 restriction against explicitly making data rights a *condition* of a contract award, that restriction does not mean that it does not have any leverage in designing contracts that entice firms to award data rights to DOD. Rogerson[12] notes that multi-year contracting has been used as an attractive incentive for guaranteeing firms a larger quantity of work and could also be used as a bargaining chip for obtaining greater data rights.[13] Contracts can also be written such that data rights are transferred to DOD at a given date in the future—known as deferred ordering and deferred delivery.

If data rights are not forthcoming, contracts might be written such that the supplier would need to provide maintenance services and spare parts at prices that mirror what a competitor would charge if it was granted access to the technical data (for parts and repair procedures that have comparable commercial counterparts, the commercial sector can serve as a baseline for prices). In any case, in selecting a sole-source supplier, the initial purchase price should be appropriately weighed against long-term life-cycle costs. Another way for DOD to shore up its bargaining posture is to require standardization as much as

---

[10] Bronwyn H. Hall et al., "The Choice between Formal and Informal Intellectual Property: A Review," *Journal of Economic Literature* 52, no. 2 (June 2014): 379.

[11] Mark A. Lemley, "The Myth of the Sole Inventor," *Michigan Law Review* 110, no. 5 (2012): 709–760.

[12] William P. Rogerson, "Economic Incentives and the Defense Procurement Process," *The Journal of Economic Perspectives* 8, no. 4 (1994): 65–90.

[13] Use of multi-year procurement contracts, however, is subject to tight Congressionally imposed constraints. Even within DOD, their use is limited because decision makers do not want to constrain future investment tradeoff decisions in response to evolving requirements. Since it would not be known whether a multi-year procurement proposal would be approved by the Military Department, the Office of the Secretary of Defense (OSD), and the Congress, the U. S. government could not offer during contract negotiations a guarantee that such a contract could be awarded. Thus, its potential use in this context is extremely limited.

possible (e.g., standardization in repair parts, standardization in using Modular Open Systems Architecture (MOSA), and standardization in maintaining aircraft under FAA airworthiness standards).

Appendix G.
Illustrations

Figures

Tables

Appendix H.
References

Aerospace Industries Association. "Aerospace Industries Association (AIA) Response to Government Advisory Panel: Request for Information on Rights in Technical Data and Validation of Proprietary Data Restrictions." August 15, 2016.

Avdellas, Nicholas J., and Steven R. Erickson. "Limits of Competition for Depot Maintenance Contracting." Paper presented at the DAU Research Symposium *The Limits of Competition in Defense Acquisition*. September 12, 2012.

Blinn, Christine, William Broadus, Duane Malloicoat, Mike McGhee, John Pasch, John Randolph, Tim Simpson, and James Wallace. "Navy Tailors Best Commercial Practices for Military Use: The C-40A Clipper Aircraft." *Defense AT&L* (March–April 2009): 22–25.

Borowski, Samuel Mark. "The Inchoate Mistake: Demystifying the Defense Department's Competition Problem." *Public Contract Law Journal* 45, no. 2 (Winter 2016).

Bowley, A. L. "Bilateral Monopoly." *The Economic Journal* 38, no. 152 (1928): 651–659.

Broderick, Sean. "North American Re-Fleeting will Bring Technological Change to Aftermarket." *Aviation Daily*, April 15, 2015.

Chenoweth, Mary E., Michael Boito, Shawn McKay, and Rianne Laureijs. *Applying Best Practices to Military Commercial-Derivative Aircraft Sustainment: Assessment of Using Parts Manufacturer Approval (PMA) Parts and Designated Engineering Representative (DER) Repairs*. RR-1020/1-OSD. Santa Monica, CA: RAND Corporation, 2016.

Crocker, Keith J., and Kenneth J. Reynolds. "The Efficiency of Incomplete Contracts: An Empirical Analysis of Air Force Engine Procurement." *The RAND Journal of Economics* 24, no. 1 (Spring 1993): 126–146.

Defense Business Board. "Innovation: Attracting and Retaining the Best of the Private Sector." Report 2014-02. Washington, DC: Defense Business Board, 2014.

Emrick Svetz, Holly. "The Re-emergence of the Purchase and Licensing of Technical Data Packages for Second Source Procurement or Sustainment." Washington, DC: Womble Carlyle Sandridge & Rice LLP, December 10, 2012.

Erwin, Sandra I. "DOD Clashes with Suppliers Over Data Rights." *National Defense*, January 2014.

Erwin, Sandra I. "DOD Mulls Changes to Weapons Maintenance Contracts." *National Defense*, May 7, 2014.

Erwin, Sandra I. “The War Over Intellectual Property: Who Owns U.S. Defense Technology?” *National Defense*, October 2012.

Erwin, Sandra. “Defense Industry Intellectual Property: The Battle Continues.” *National Defense*, October 10, 2016.

Erwin, Sandra. “Intellectual Property Fights Par for the Course in F-35 Program.” *National Defense*, September 8, 2016.

Figureras, Ray. “Product Support for a Commercial Derivative.” Briefing. Seattle, WA: P-8A Product Support IPT, n.d.

Flamm, Kenneth. “Redesigning the Defense Industrial Base.” In *Arming the Future: A Defense Industry for the 21st Century*, edited by Ann R. Markusen and Sean S. Costigan, 224–246. New York: Council on Foreign Relations Press, 1999.

Gross, Charlene. “Development of an Intellectual Property Strategy: Research Notes to Support Department of Defense Programs.” Special Report: CMU/SEI-2014-SR-036. Pittsburgh, PA: Software Engineering Institute. October 2014.

Hall, Bronwyn H., Christian Helmers, Mark Rogers, and Vania Sena. “The Choice between Formal and Informal Intellectual Property: A Review.” *Journal of Economic Literature* 52, no. 2 (June 2014): 375–423.

Hamerlinck, Roger. “Defining Technical Data Rights in Intellectual Property.” Fort Belvoir, VA: U.S. Army Acquisition Support Center, August 2010.

Insinna, Valerie. “Game Over: GAO Protest Reveals Cost Was Deciding Factor in B-21 Contest.” *Defense News*, October 25, 2016.

Jensen, Jacob C. *KC-46 Workforce Requirements for Depot Maintenance Activation.* Master’s thesis. AFIT-ENS-14-M-12. Wright-Patterson AFB, OH: Air Force Institute of Technology, March 2014.

John Lovering. “The Defense Industry as a Paradigmatic Case of Actually Existing Globalization.” In *The Place of the Defense Industry in National Systems of Innovation*, Occasional Paper #25, edited by Judith Reppy, 13–23. Ithaca, NY: Cornell University Peace Studies Program, April 2000.

Krotec, Josh. “Review of Government Access to Intellectual Property Rights of Private Sector Firms (see also FY 2016 NDAA, § 875).” Memorandum to the Institute for Defense Analyses. Westport, CT: First Aviation Services Inc., May 5, 2016.

Legal Information Institute (LII). “Intellectual Property.” https://www.law.cornell.edu/wex/intellectual_property.

Lemley, Mark A. “The Myth of the Sole Inventor.” *Michigan Law Review* 110, no. 5 (2012): 709–760.

Ligon, Joel, and Thomas Morgan. “USAF Type Certification of Commercial Derivative Aircraft.” Briefing. Air Force Materiel Command and Federal Aviation Administration. October 25, 2007.

Lill, Brendan. “Restrictive Legends in Federal Procurement: Is the Risk of Losing Data Rights Too Great?” *Public Contract Law Journal* 38, no. 4 (Summer 2009): 895–911.

Markusen, Ann. “Should We Welcome a Transnational Defense Industry?” In *The Place of the Defense Industry in National Systems of Innovation*, Occasional Paper #25, edited by Judith Reppy, 24–46. Ithaca, NY: Cornell University Peace Studies Program, April 2000.

McEwen, James P, David S. Bloch, Richard M. Gray, and John T. Lucas. *IP and Technology in Government Contracts.* LexisNexis, 2014.

Miller, Tom D. *The Defense Sustainment Industrial Base – A Primer*. Washington, DC: The Brookings Institution, June 30, 2010.

Murray, Randy. “Intellectual Property and Technical Data Rights: It’s About the Money.” Carlisle, PA: United States Army War College. March 19, 2012.

Myerson, Roger B., and Mark A. Satterthwaite. “Efficient Mechanisms for Bilateral Trading.” *Journal of Economic Theory* 29, no. 2 (April 1983): 265–281.

Nash, John. F., Jr. “The Bargaining Problem.” *Econometrica* 18, no. 2 (April 1950): 155–162.

National Research Council. *Engineering, and Medicine, Owning the Technical Baseline for Acquisition Programs in the U.S. Air Force*. Washington, DC: The National Academies Press, 2016.

Pickarz, Gene. “Four Questions You Must Answer to Solve Any Data Rights Issue.” *Contract Management*, September 2012.

Putnam, Brian et al. “Data Rights Team Findings and Recommendation.” Oklahoma City, OK: Tinker AFB Air Force Sustainment Center. April 25, 2014.

Putnam, Brian. “Evaluating Intellectual Property and Data Rights in Competitive Environments.” Oklahoma City, OK: Tinker AFB Air Force Sustainment Center, September 23, 2015.

Putnam, Brian. “Solving the Tech Data Problem.” Briefing. Oklahoma City, OK: Tinker AFB Air Force Sustainment Center, June 8, 2016.

Putnam, Brian. “Technical Data Rights in Sustainment.” Briefing. Oklahoma City, OK: Tinker AFB Air Force Sustainment Center. May 6, 2016.

Rogerson, William P. “Economic Incentives and the Defense Procurement Process.” *The Journal of Economic Perspectives* 8, no. 4 (1994): 65–90.

Thompson, Loren. “Five Reasons Boeing’s Big Bet on Air Force Tankers Will Pay Off Handsomely.” *Forbes*, August 19, 2016.

Tirpak, John A. “On to the Stealthy KC-Z.” *Air Force Magazine*, September 21, 2016.

Trend, Christine C. “Killing the Goose that Laid the Golden Egg: Data Rights Law and Policy in Department of Defense Contracts.” *Public Contract Law Journal* 34, no. 2 (Winter 2005): 287–336.

Van Atta, Richard, Michael J. Lippitz, Jasper C. Lupo, Rob Mahoney, and Jack Nunn. *Transformation and Transition: DARPA's Role in Fostering an Emerging Revolution in Military Affairs*, Vol. 1, *Overall Assessment*. IDA Paper P-3698. Alexandria, VA: Institute for Defense Analyses, April 2003.

Van Atta, Richard, Robert Bovey, Julius Harwood, William Hong, Andrew Hull, Lee Kindberg, and Michael J. Lippitz. *Science and Technology in Development Environments: Findings and Observations for the Missile Defense Agency from Commercial Industry and Defense Programs*. IDA Paper P-3764. Alexandria, VA: Institute for Defense Analyses, May 2003.

Wilder, Virginia. *Gaining Leverage over Vendor Lock to Improve Acquisition Performance and Cost Efficiencies*. McLean, VA: MITRE Corporation, April 1, 2014.

Winborne, Jr., George. "Who's Killing the Goose?" Paper presented at the American Bar Association (ABA) Section of Public Contract Law Program, Intellectual Property in Government Contracts—What You Didn't Learn in Kindergarten, Boston, MA, November 11–12, 2010.

Government Documents

"Acquisition Strategy for Presidential Aircraft Recapitalization (PAR) Program." Wright-Patterson AFB, OH: AFLCMC/WLJ. September 4, 2015. FOR OFFICIAL USE ONLY.

Air Force Materiel Command. "Depot Maintenance Activation Planning." Air Force Materiel Command, Instruction 21-101. Wright-Patterson AFB, OH: Air Force Materiel Command, 14 June 2012.

Air Force Space Command. "Acquiring and Enforcing the Government's Rights to Technical Data and Computer Software Under Department of Defense Contracts: A Practical Handbook for Acquisition Professionals." 7th ed. Colorado Springs, CO: Peterson Air Force Base, Office of the Staff Judge Advocate, Space and Missile Center, August 2015.

"Data Acquisition Instructions." Hill AFB Instruction 63-103. March 7, 2012.

"Data Rights Team Findings and Recommendations." Oklahoma City, OK: Tinker Air Force Base, Air Force Sustainment Center, April 25, 2014.

Defense Acquisition University Website. *Defense Acquisition Guidebook*. Accessed July 7, 2016. https://acc.dau.mil/CommunityBrowser.aspx?id=489751&lang=en-US; https://acc.dau.mil/CommunityBrowser.aspx?id=510071; https://acc.dau.mil/CommunityBrowser.aspx?id=511646&lang=en-US; https://acc.dau.mil/CommunityBrowser.aspx?id=638337&lang=en-US.

Defense Acquisition University, "Glossary of Defense Acquisition Acronyms and Terms – Product Support Manager (PSM)." Accessed July 8, 2016. https://dap.dau.mil/glossary/pages/2909.aspx.

Defense Acquisition University. “Glossary of Defense Acquisition Acronyms and Terms – Acquisition Strategy.” Accessed July 7, 2016. https://dap.dau.mil/glossary/pages/1398.aspx.

Defense Acquisition University. *Integrated Product Support Element Guidebook*. Washington, DC: Defense Acquisition University, December 2011.

“Defense Federal Acquisition Regulation Supplement: Rights in Technical Data and Validation of Proprietary Data Restrictions (DFARS Case 2012-D022), Part V: Regulatory Flexibility Act.” *Federal Register* 81, no. 116 (16 June 2016).

Defense Procurement and Acquisition Policy (DPAP). “Defense Federal Acquisition Regulation Supplement (DFARS) and Procedures, Guidance, and Information.” http://www.acq.osd.mil/dpap/dars/dfarspgi/current/.

Department of Defense. “Understanding and Leveraging Data Rights in DOD Acquisitions.” Washington, DC: Department of Defense Open Systems Architecture Data Rights Team, October 2014.

Department of Defense, Acquisition, Technology and Logistics. “Better Buying Power – BBP Background.” Accessed 14 July 2016. http://bbp.dau.mil/background.html.

Department of Defense. “Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, November 13, 2012.

Department of Defense. “Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, September 14, 2010.

Department of Defense. “Better Buying Power: Mandate for Restoring Affordability and Productivity in Defense Spending.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, June 28, 2000.

Department of Defense. “Defense Acquisition.” Memorandum. Washington, DC: Deputy Secretary of Defense for Acquisition, Technology, and Logistics (AT&L), November 26, 2013.

Department of Defense. “DOD, Innovation and Intellectual Property in Commercial and Proprietary Technologies.” Washington, DC: Office of the Under Secretary of Defense for Acquisition Technology and Logistics, January, 2016.

Department of Defense. “Guidance: Intellectual Property Strategy.” Washington, DC: Department of Defense Open Systems Architecture Data Rights Team, August 2014.

Department of Defense. “Implementation Directive for Better Buying Power 2.0—Achieving Greater Efficiency and Productivity in Defense Spending.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 24, 2013.

Department of Defense. “Implementation Directive for Better Buying Power 3.0—Achieving Dominant Capabilities through Technical Excellence and Innovation.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, April 9, 2015.

Department of Defense. “Implementation Directive for Better Buying Power – Obtaining Greater Efficiency and Productivity in Defense Spending.” Memorandum. Washington, DC: Under Secretary of Defense for Acquisition, Technology, and Logistics, November 3, 2010.

Department of Defense. “Initiatives: Open Systems Architecture (OSA).” Washington, DC: Office of the Deputy Assistant Secretary of Defense (ODASD) for Systems Engineering, 22 June 2016.

Department of Defense. “Operation of the Defense Acquisition System.” Department of Defense Instruction (DODI) 5000.02. Washington, DC: USDAT&L, December 8, 2008.

Department of Defense. “Operation of the Defense Acquisition System.” Department of Defense Instruction (DODI) 5000.02. Washington, DC: USDAT&L, January 7, 2015.

Department of Defense. “Operation of the Defense Acquisition System.” Department of Defense Instruction (DODI) 5000.02. Washington, DC: USDAT&L, May 12, 2013.

Department of Defense. “Operation of the Defense Acquisition System.” Interim Department of Defense Instruction (DODI) 5000.02. Washington, DC: USDAT&L, November 25, 2013.

Department of Defense. “Standard Practice – Technical Data Packages.” MIL-STD-31000A. Picatinny Arsenal, NJ: Commander, U.S. Army ARDEC, ATTN: RDAR-QES-E, 26 February 2013.

Department of Defense. “The Defense Acquisition System.” Department of Defense Directive (DODD) 5000.01. Washington, DC: USDAT&L, May 12, 2003, Certified Current as of November 20, 2007.

Department of Defense. *Diminishing Manufacturing Sources and Material Shortages (DMSMS): A Guidebook of Best Practices for Implementing a Robust DMSMS Management Program*. SD-22. Fort Belvoir, VA: Defense Standardization Program Office, February 2015.

Department of Defense. *Guidelines for Creating and Maintaining a Competitive Environment for Supplies and Services in the Department of Defense*. Washington, DC: Undersecretary of Defense for Acquisition, Technology, and Logistics, August 2014.

Department of Defense. *Intellectual Property: Navigating through Commercial Waters: Issues and Solutions When Negotiating Intellectual Property with Commercial Companies*. Version 1.1. Washington, DC: Office of the Under Secretary for Defense for Acquisition, Technology, and Logistics, October 15, 2001.

Department of Defense. *Logistics Assessment Guidebook*. Washington, DC: USDAT&L, 2011.

Department of Defense. *PBL Guidebook: A Guide to Developing Performance-Based Arrangements*. Washington, DC: Assistant Secretary of Defense for Logistics and Material Readiness, 3 March 2016.

Department of Defense. *Procedures for the Acquisition and Management of Technical Data*. DOD 5010.12-M. Washington, DC: Assistant Secretary of Defense (Production and Logistics). May 1993.

Department of Defense. *Product Support Manger Guidebook*. Washington, DC: Office of the Deputy Assistant Secretary of Defense for Materiel Readiness, June 2016.

Department of Defense. *Project HINDSIGHT*. Final Report. Washington, DC: Office of the Director of Defense Research and Engineering, October 1969. AD0495905.

Department of Defense. *Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal Years 2015·through 2017*. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, May 2016.

Department of Defense. *U.S. Air Force Spent Billions on F117 Engine Sustainment Without Knowing What a Fair Price Was*. DODIG-2016-059. Washington, DC: Inspector General, March 11, 2016.

Federal Aviation Administration. "Guidance for Certification of Military and Special Mission Modifications and Equipment for Commercial Derivative Aircraft (CDA)." Advisory Circular AC No: 20-169. Washington, DC: U.S. Department of Transportation, September 30, 2010.

General Accounting Office. *Defense Depot Maintenance: Uncertainties and Challenges DOD Faces in Restructuring Its Depot Maintenance Program*. GAO/T-NSIAD-97-112. Washington, DC: General Accounting Office, May 1, 1997.

Government Accountability Office. *Depot Maintenance: Additional Information Need to Meet DOD's Core Capability Reporting Requirements*. GAO-13-194. Washington, DC: Government Accountability Office, February 2013.

Government Accountability Office. *Defense Acquisition: DOD Should Clarify Requirements for Assessing and Documenting Technical-Data Needs*. GAO-11-469. Washington, DC: Government Accountability Office, May 2011.

Government Accountability Office. *Defense Logistics: Opportunities to Improve the Army's and Navy's Decision-making Process for Weapon System Support*. GAO-02-306. Washington, DC: Government Accountability Office, February 28, 2002.

Government Accountability Office. *Depot Maintenance: Accurate and Complete Data Needed to Meet DOD's Core Capability Reporting Requirements*. GAO-14-777. Washington, DC: Government Accountability Office, September 2014.

Government Accountability Office. *Federal Contracting: Opportunities Exist to Increase Competition and Assess Reasons When Only One Offer Is Received*. GAO-10-833. Washington, DC: Government Accountability Office, July 2010.

Government Accountability Office. *Weapons Acquisition: DOD Should Strengthen Policies for Assessing Technical Data Need to Support Weapon Systems*. GAO-06-839. Washington, DC: Government Accountability Office, July 2006.

Kendall, Frank. "Better Buying Power 3.0." White Paper. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, September 19, 2014.

Naval Air Systems Command. "Gov/Industry Panel on IP." Briefing. Patuxent River, MD: NAVAIR Logistics and Industrial Operations, July 12, 2016.

Packard, David (Chairman of the Blue Ribbon Panel) et al. *A Quest for Excellence: Final Report by the President's Blue Ribbon Commission on Defense Management*. Washington, DC: The White House, Office of the President of the United States June 1986.

"Presidential Aircraft Recapitalization (PAR) Acquisition Category (ACAT) 1D Life Cycle Sustainment Plan (LCSP)." Version 2.0. Wright-Patterson AFB: Air Force Life Cycle Management Center. February 3, 2016.

"Technology Development Strategy [or] Acquisition Strategy for [Program Name] [Sample Outline]." April 20, 2011, 12. Accessed 30 September 2016. https://acc.dau.mil/CommunityBrowser.aspx?id=717918&lang=en-US.

U. S. Government Publishing Office. "United States Code, Title 10 – Armed Forces." https://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE&searchPath=Title+10%2FSubtitle+A%2FPart+IV%2FCHAPTER+137&oldPath=Title+10%2FSubtitle+A%2FPART+IV&isCollapsed=true&selectedYearFrom=2014&ycord=585.

10 U.S.C. Subtitle A – General Military Law. Part IV – Service, Supply, and Procurement, Chapter 137 – Procurement Generally. §2320 – Rights in Technical Data.

10 U.S.C. Chapter 137 – Procurement Generally, §2321 – Validation of Property Data Restrictions.

10 U.S.C. Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, § 2460 – Definition of Depot-Level Maintenance and Repair.

10 U.S.C. Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2464 – Core Logistics Capabilities.

10 U.S.C., Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2466 – Limitations on the Performance of Depot-Level Maintenance of Material.

10 U.S.C., Chapter 146 – Contracting for Performance of Civilian Commercial or Industrial Type Functions, §2474 – Centers of Industrial and Technical Excellence: Designation; Public-Private Partnerships.

Update on KC-46A and Legacy Aerial Refueling Aircraft Programs, Before the House Armed Services Committee, Subcommittee on Seapower and Projection Forces, 114th Cong. (October 13, 2011) (witness statements, Department of the Air Force presentation).

Appendix I.
Abbreviations

ACAT	Acquisition Category
AF	Air Force
AFB	Air Force Base
AFSC	Air Force Specialty Code
AIA	Aerospace Industries Association
ARDEC	Armament Research, Development and Engineering Center
ARPA	Advanced Research Projects Agency
BBP	Better Buying Power
BDS	Boeing Defense System
BRAC	Base Realignment and Closure
CDA	commercial derivative aircraft
CDRL	Contract Data Requirements List
CFR	Code of Federal Regulations
CITE	Center of Industrial and Technical Excellence
CJCS	Chairman, Joint Chiefs of Staff
CLIN	contain contract line item
CLS	contractor logistics support
DAH	Design Approval Holder
DARPA	Defense Advanced Research Projects Agency
DASN(RDT&E)	Deputy Assistant Secretary of the Navy for Research Development Test and Evaluation
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Workforce Improvement Act
DDR&E	Director of Defense Research and Engineering
DFARS	Defense Federal Acquisition Regulation Supplement
DID	Data Item Description
DLA	Defense Logistics Agency
DMS	Data Management Strategy
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DOD	Department of Defense
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DPAP	Defense Procurement and Acquisition Policy
EMD	Engineering and Manufacturing Development
FAA	Federal Aviation Administration
FAR	Federal Acquisition Regulation

FFF	Form, Fit and Function
FFRDC	Federally Funded Research and Development Center
FRC-SE	Fleet Readiness Center-Southeast
FRP	Full-Rate Production
FY	Fiscal Year
GAO	General Accounting Office Government Accountability Office
ICA	Instructions for Continued Airworthiness
IDA	Institute for Defense Analyses
IETM	Interactive Electronic Technical Manual
ILA	Independent Logistics Assessment
IOC	initial operational capability
IP	intellectual property
IP/TD	intellectual property/technical data
IPS	Intellectual Property Strategy
IPT	Integrated Process Team
IR&D	Independent Research & Development
JIEDDO	Joint Improved Explosive Device Defeat Office
JRAC	Joint Rapid Acquisition Cell
LCSP	Life-Cycle Sustainment Plan
LRIP	low-rate initial production
MAA	Military Airworthiness Authorities
MDAP	Major Defense Acquisition Program
MIT	Massachusetts Institute of Technology
MOSA	Modular Open Systems Architecture
MRO	maintenance, repair, and overhaul
MSA	Materiel Solution Analysis
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NDAA	National Defense Authorization Act
NSIAD	National Security and International Affairs Division
O&S	Operations and Support
O-C	open-competitive
ODASD	Office of the Deputy Assistant Secretary of Defense
OEM	original equipment manufacturer
OMIT	operations, maintenance, installation and training
OSD	Office of Secretary of Defense
P&D	Production and Deployment Phase
P.L.	Public Law
PBL	performance-based logistics
PEO	Program Executive Office (or Officer)
PMO	program management office
PSM	Product Support Manager
QDR	Quadrennial Defense Review
R&D	research and development
RFP	Request for Proposal

RMA	Revolution in Military Affairs
R-P	restrictive-proprietary
RRTO	Rapid Response Technology Office
S&T	science and technology
SAF/AQ	Office of the Assistant Secretary of the Air Force (Acquisition)
SAF/AQD	Deputy Assistant Secretary (Logistics and Product Support)
SECDEF	Secretary of Defense
TD	technical data
TDP	technical data package
TDS	Technology Development Strategy
TM	Technical Manual
TMRR	Technology Maturation and Risk Reduction
TO	Technical Order
U.S.	United States
U.S.C., USC	United States Code
UAS	Unmanned Aircraft System
UAV	unmanned aerial vehicle
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology and Logistics

This page intentionally blank.

REPORT DOCUMENTATION PAGE	Form Approved OMB No. 0704-0188

1. REPORT DATE (DD-MM-YY)	2. REPORT TYPE	3. DATES COVERED (From – To)
xx-05-2017	Final	

4. TITLE AND SUBTITLE

Department of Defense Access to Intellectual Property for Weapon Systems Sustainment

5a. CONTRACT NO.

HQ0034-14-D-0001

5b. GRANT NO.

5c. PROGRAM ELEMENT NO(S).

6. AUTHOR(S)

Richard Van Atta, Project Leader
Royce Kneece
Michael Lippitz
Christina Patterson

5d. PROJECT NO.

5e. TASK NO.

AR-6-4147

5f. WORK UNIT NO.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Institute for Defense Analyses
4850 Mark Center Drive
Alexandria, VA 22311-1882

8. PERFORMING ORGANIZATION REPORT NO.

IDA Paper P-8266
IDA Log H 17-000030

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Defense Procurement and Acquisition Policy
3060 Defense Pentagon, Room: 5E621
Washington, DC 20301-3060

10. SPONSOR'S / MONITOR'S ACRONYM(S)

DPaP

11. SPONSOR'S / MONITOR'S REPORT NO(S).

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

This research responses to §875 of the 2016 National Defense Authorization Act, directing the Department of Defense (DOD) to conduct a review of (1) regulations and practices relating to access to intellectual property (IP) data and rights in acquiring weapon systems; and (2) IP-related practices to facilitate competition in sustainment of weapon systems. IDA reviewed regulations and guidance documents to identify provisions regarding IP data and rights to enable sustainment. IDA sent questionnaires to major DOD depots requesting them to identify impacts of failure to acquire IP data. To evaluate practices regarding IP in sustainment, IDA visited several DOD acquisition and logistics offices. The research identified the difficulties DOD faces in acquiring IP data and rights and the implications of failure to obtain IP data. IDA identified the major cause of the inability to acquire IP data and rights to be the sole-source relationships that DOD enters into for the acquisition and sustainment of most major systems. The research suggests the need for better oversight of processes for acquiring IP data and rights; increased use of commercial approaches to maintenance of DOD aircraft; and increasing the availability of legal and technical experts in IP to acquisition management organizations.

15. SUBJECT TERMS

Intellectual property, technical data, competition in sustainment, sustainment costs

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NO. OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Michael J. Canales
U	U	U	U	140	19b. TELEPHONE NUMBER (Include Area Code) (703) 696-8571

This page is intentionally blank.